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BEVERAGE MAKER

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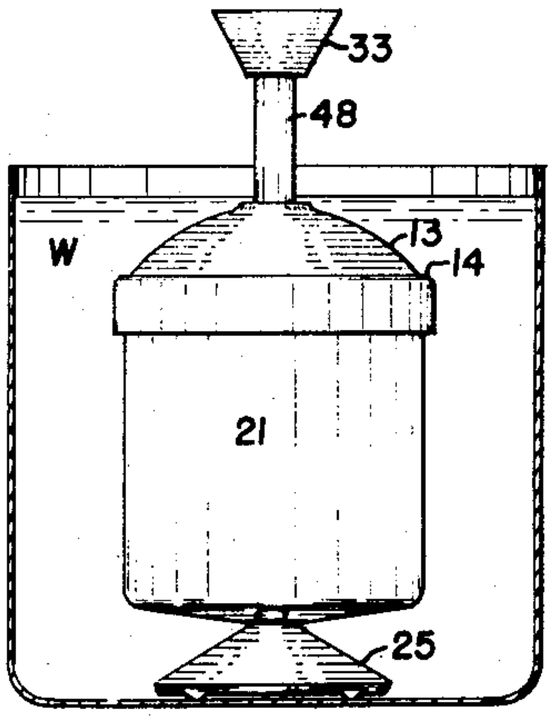

Fig. 1.

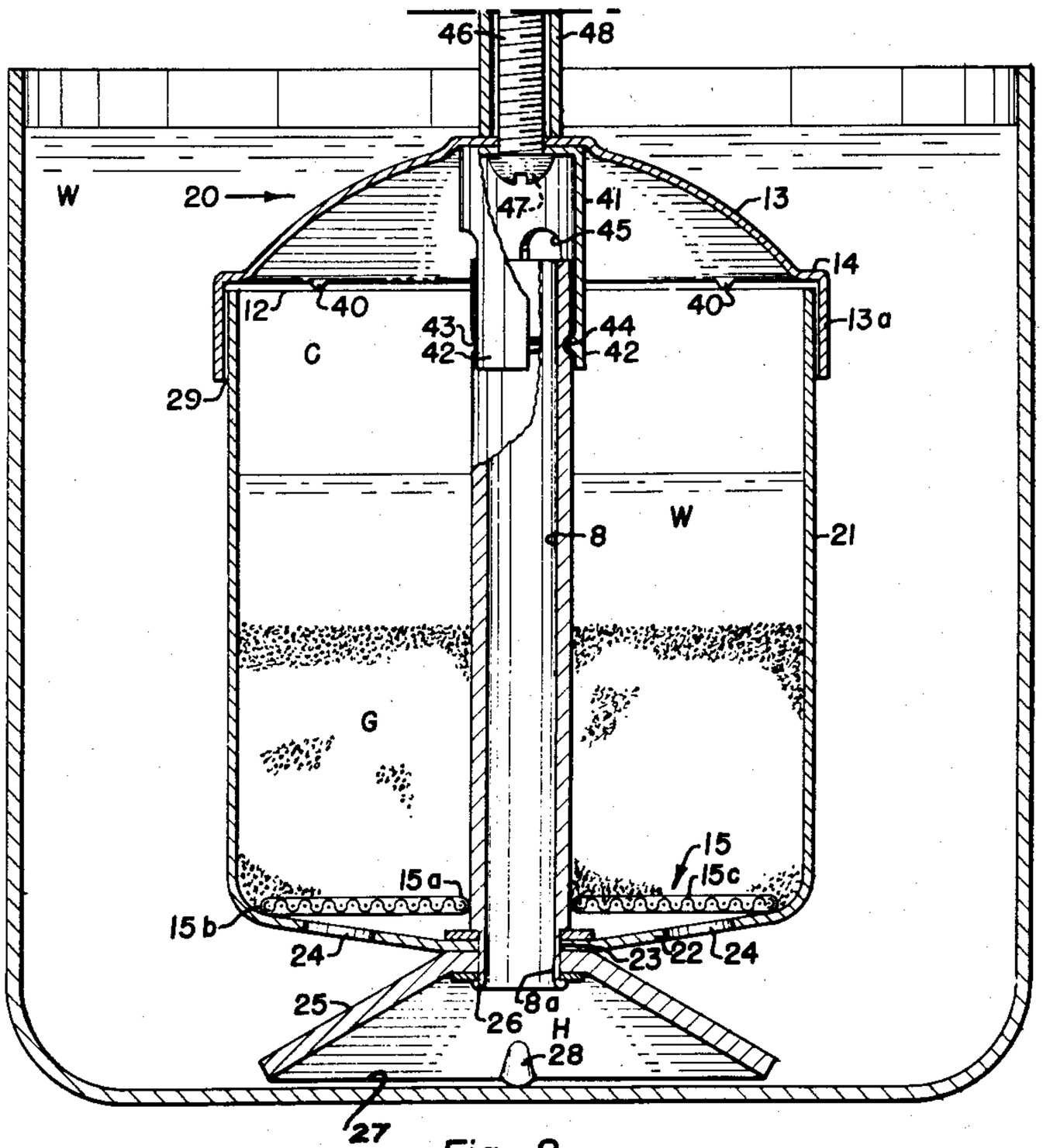

Fig. 2

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BEVERAGE MAKER

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4 Claims. (Cl. 99—300)

1

This invention relates to beverage makers, of the type adapted for use in an open type outer vessel of liquid, and is a continuation in part of the invention disclosed in my prior co-pending United States patent application, Serial number 122,910, being of the third modification thereof illustrated in Figure 10 thereof. Said prior application modification comprises a substantially unitary sealed cup-shaped maker, having a removable frictionally secured cup-shaped cover thereon, an internal inverted funnel for a floor of the first cup, extract ports in the lower wall portion of the first cup, a removable filter screen in that first cup above the extract ports and for holding the beverage material thereon, a plurality of small exhaust ports formed in the upper wall of the first cup below its upper edge and above the extract ports, with said cover having a downwardly extending outer collar portion in spaced relationship from and extending below the outside of said exhaust ports, a single restricted air-escape port in the upper part of said cover, and with the tube of the inverted funnel and the ports and other parts being so constructed so that heat application to the under floor of the outer vessel will cause two-directional liquid circulation or flushing of the beverage material within the maker, all as further explained and defined in said co-pending application. I have found it more practical to eliminate the air-escape port in the cover entirely, and have perfected a single ring-type exhaust and air-escape port combined, with the ring-type port being constantly open by a novel relationship between such a cover and the top edge of the first cup. Instead of frictionally mounting said removable cover on the top edge of the first cup, I frictionally secure by a novel finger-snap friction securing means cooperating with the top of the centrally located funnel or percolation tube. By this construction I have done away with the need for a separate uppermost air-escape port to permit an early start of the percolation operation, and have utilized the top edge of the lower cup in making my novel ring-type constantly open single port, eliminating the need for forming separate exhaust ports or holes adjacent the top of the first cup.

It is therefore a principal object of this invention to construct such a beverage maker with a novel single constantly open ring-port adjacent the top edge of the lower cup.

Another principal object is to provide such a ring-port construction cooperating with the downwardly extending outer collar of the normally stationary and removably held cover.

2

Another object of this invention is to construct such a maker having such a removable cover normally frictionally held by a novel finger-snap securing means.

Another object is to construct such a maker having such finger-snap securing means in association with the top of the percolation tube.

Another object is the provision of such a maker with a single constantly and fixedly open ring-port, removable cover and compression chamber under the cover combination, with said ring-port positioned adjacent the top of the compression chamber, whereby to permit two-directional liquid flow, from and into the maker, respectively, upon operational use thereof.

Another object is to provide such a type beverage maker of practical, simplified and economical construction.

Other and further objects will be apparent from the detailed description herein and from the accompanying drawings.

In the drawings:

Figure 1 is an elevational view of this embodiment or continuation of my novel beverage maker, illustrated as in use in a small outer vessel having a shallow depth of liquid therein;

Figure 2 is an enlarged cross-sectional vertical view of said maker having the features of this invention and illustrated as in use in a larger outer vessel having a deeper liquid depth therein sufficiently to completely cover my said maker, showing the liquid before the start of percolation operation.

In the drawings, in which like references have been used to designate like or similar parts throughout the various views, the reference numeral **20** has been used to designate my novel maker unit generally. I provide a cup-like member **21**, and instead of having that member formed with an integral inverted funnel-like floor, I make the floor portion **22** thereof slightly convex. A plurality of extract ports **24** are formed in that floor, as illustrated. I provide a central opening **23** in the floor, and a tube **8** binds a lower conical member **25** to and below that floor, by the tube being rigidly secured through the opening **23**, and a corresponding opening in member **25**, to extend said openings to adjacent the top edge **12** of the cup **21**. I form the lower portion of tube **8** with a reduced neck **8***a* so that the shoulder formed adjacent the neck, as illustrated, binds the floor **22** and the conical member **25** together between a pair of washers, by tightly crimping the lower extended portion of the neck **8***a* outwardly and upwardly against the lowermost of said washers below cone **25**. Cone **25** has

an upper central opening through which the neck of the tube extends before the crimping of neck end 8*a* is effected at 26. By that construction cup 21, tube 8 and cone 25 are rigidly held together as a unit. The space below conical member 25 comprises a heater chamber, designated as H. To permit liquid flow from the outer vessel to enter said chamber H, I form three or more dwarf legs or bosses 28, at the lower rim edge of cone member 25, formed, as illustrated, to project downwardly equi-distant from the rim 27, so that the unit 20 will rest on said bosses 28 and thereby the lower rim 27 is spacedly held above the floor of the outer vessel. Said space, between the floor of the outer vessel and the lower cone rim 27, is provided to permit a sufficient liquid flow from the outer vessel to enter heater chamber H to satisfy the maximum percolation flow requirement of liquid up tube 8 during percolation use of the maker upon heat being applied to the under floor of the outer vessel. A disc filter element 15, designed to slidably, snugly and removably fit over and around tube 8, is provided of sufficient outer diameter to extend horizontally over and beyond extract ports 24, to effect a contact seal with the sloping floor 22, being designed to hold the beverage material, such as coffee grounds G, on the top side thereof. It will be noted that this floor and filter construction provides a communicating lower space between the inner part of the floor and the filter in communication with each port, thus providing for free liquid extract circulation therebetween. I construct filter 15 of an inner U-shaped ring 15*a*, an outer U-shaped ring 15*b*, and between those rings I secure, as by crimping the U-shaped rings, a fine mesh filter screen wire 15*c*, rigidly, forming a flat unitary disc.

As in the parent application hereto, I provide a removable cover, frictionally held on the cup. In this modification I provide a dome-shaped cover 13, having an outer horizontal peripheral shoulder 14, and an outer restrictively spaced and downwardly extending collar 13*a*, frictionally normally stationarily removably held to cup 21 in a novel manner. The collar 13*a* is formed so that its interior is restrictively spaced about $^{10}/_{1000}$ to $^{15}/_{1000}$ of an inch, for the average home size maker, away from the outer upper vertical wall of the cup 21. Said space, designated as 29, comprises my single annular or ring-type port. So that the cover does not rest with its shoulder 14 on the upper edge of cup 21, and thereby close said port 29, I form a plurality of spacer bosses 40 on the under side of shoulder portion 14, designed to project downwardly a uniform distance, as illustrated. The said bosses rest on the top edge 12, and thereby hold the cover shoulder portion a spaced distance at all times above that edge 12. Bosses 40 create an opening or space between the under side of 14 and top edge of 12 sufficiently large, commensurate with the size of the ring port 29, to permit freedom of communication between the compression chamber C, under the cover, and said ring port 29. In the construction of the cover 13, I suitably mount a handle above the cover, as by providing a central hole in the top portion thereof and mounting a suitable handle, as by extending a stud screw bolt 46 upwardly through the hole, with the head 47 on the under side of the cover so as to sealingly close the hole with that head, and extending the bolt through a spacer tube 48. A nonheat-conducting handle 33 has a lower internally threaded central opening, adapted to receive the bolt 46

threadedly inserted therein. Bolt 46 binds the tube 48 between the cover 13 and handle 33, thereby forming a rigid unit, as illustrated, upon bolt 46 being tightly seated into the handle opening. I frictionally secure the cover 13 onto the cup 21 by a spring-tensioned finger snap-on collar unit, indicated generally as 41, whereby the cover may be manually removed when desired. Collar 41 is suitably constructed, as from a tube, having an inwardly extending horizontal portion having an opening of the same diameter as and adapted to receive the bolt 46 therethrough. Before assembly of the handle, bolt 46 is first inserted through that opening of the finger collar 41, as illustrated, and then the said bolt is inserted upwardly through the hole in the cover, tube 48 and then into the handle. Screw seating of the bolt into the handle thus binds the collar 41 rigidly to and as a part of the rigid cover unit, 13—41—46—48—33. I form the collar finger unit 41 from a tube, forming several corresponding vertical spaces 45 therein, for a portion of its height, as illustrated, thus forming fingers 42 therebetween and equi-distantly spaced apart in the horizontal plane thereof. I construct the finger unit 41, with its inner diameter slightly larger than the outer diameter of percolation tube 8, so that the former will fit slidably and snugly thereover. This finger collar unit 41 construction provides an inherent outwardly resisting spring tension to the fingers 42. A horizontal annular groove 43 is formed on the exterior of percolation tube 8, adjacent the top thereof. At the lower end of each finger 42, I form an inwardly projecting ridge 44 and an outwardly flared guide portion just therebelow, with each of said ridges thereof being formed of identical radius with the radius of the groove 43 on tube 8. Ridges 44 of each finger 42 are formed in horizontal alignment with each other. Groove 43, of tube 8, is vertically positioned with relation to finger ridges 44, when the cover 13 is placed on the cup 21 with bosses 40 resting on edge 12 of the cup, so that said groove 43 will be in exact horizontal alignment with said ridges 44. It will thus be seen that ridge 44, of each finger 42, extends inwardly a distance equal to the radius of said groove 43, thereby resulting in a horizontal diametrical distance, between the inward extended circle of opposing finger ridges, which is less than the outer diameter of the tube 8. As a result, when the fingers 42 are pushed downwardly over the top of tube 8, each finger is flexed outwardly, against its inherent spring tension, by its ridge riding over the outside of the tube until the finger ridges come into alignment with the tube groove 43. Said cover unit is designed so that the ridges 44, of said fingers, come into alignment with tube groove 43, and the tension of those fingers 42 then snap each ridge into the tube groove 43, when the under edges of the cover bosses 40 rest on the top edge 12 of the member 21. Said snap-on collar-finger unit 41 acts as means for removably securing the cover to the cup, with the bosses 40 assuring that said ring port 29 is constantly open. The inherent outwardly resisting tension of the fingers 42 is sufficient to prevent any percolation pressure, formed under cover 13 during operation, from pulling finger ridges 44 out of tube groove 43. The cover 13 is adapted for manual removal from the cup 21, by an upward pressure being exerted through handle 33 sufficiently to cause the fingers 42 to spread their ridges out of groove 43, until said ridges 44 clear the top of tube 8. I preferably

construct the finger collar unit **41** with three of the fingers **42**. It is to be noted that in forming the cut-out portions **45**, of the collar snap-on unit **41**, in forming the fingers **42**, as described, I make the cut-out space **45** of sufficient vertical height or size so that each of said spaces extends above the top of tube **8** when the cover unit is in place, as illustrated in Figure 2, so as to permit free percolation liquid from tube **8** to enter the underside of the cover compression chamber C.

I will now explain the operation of this modification of my novel beverage maker unit. The cover unit is removed from the cup **21**, and after the filter disc **15** is in place as illustrated, and if coffee is to be made, for example, then approximately one level teaspoon of fine grounds, per cup of liquid used in the outer vessel **2**, is placed on the filter **15** within the unit, and the cover is replaced. Then the handle **33** is grasped and the entire unit **20** is pressed downwardly into the liquid of the outer vessel until the legs **28** rest on the floor of that vessel. In Figure 2 I have illustrated such an outer vessel having water, of less than about 170 degrees temperature, therein of a depth to completely cover the unit **20** after the latter is fully inserted into the outer vessel **2** and rests on the floor thereof. As the unit **20** is inserted downwardly into the water of the outer vessel, the air within the unit **20**, below the level of the lower edge of the cover collar **13***a* escapes out the top ring port **29**, as the water enters tube **8** and extract ports **24**. It is to be noted that I construct the lower cone member **25** of extra heavy material, for the reason that same acts as a ballast to keep the unit **20** upright and to more than counter-balance the buoyancy effect of any momentarily unreleased air within the unit. The spacer bosses **40** act to assure that the ring port **29** is held open despite the downward thrust pressure exerted on the handle **33**. Before the start of percolation, assuming, as in Figure 2, that the water level of the outer vessel is deeper than the height of the unit **20**, after the initial insertion of the maker **20** into such water, the water will tend to seek a level point within the maker commensurate with the counterbalancing weight of the displaced water in the outer vessel, but never higher than the top edge **12** of the cup **21**. The air left under the top **13** and above edge **12** will be trapped therein temporarily. I construct my entire maker unit **20** so that the weight thereof is greater than any possible amount of displaced water, when inserted into water of average size home maker outer vessel of a depth to approximately midway of the height of the tube **48** of the handle assembly, so as to be able to remain upright within the water when first inserted therein and with the legs **28** resting on the bottom. I have found it advisable to construct the cone **25**, or other lower portion of the unit, with a counterbalancing weight or material, so that during percolation operation, when maximum continued percolation takes place with its steam vapor accumulation within the unit in compression chamber C, any steam accumulation buoyancy effect caused thereby will not lift the unit and its legs **28** off of the lower outer vessel floor, and so that it will remain in place within the outer vessel at all times and maximum percolation operation be permitted, as will be explained further. After the maker unit is placed within the water of the outer vessel, and heat applied by a suitable heater element to the floor of the outer vessel, heated water collects momentarily under cone **25** heater chamber H until it rises therefrom up percolation tube **8**, as will be understood. As that heated water rises up the tube **8**, a flow of water occurs from the outer vessel under lower rim **27** of cone **25** into chamber H. The heated water is discharged from the top of tube **8**, and also later steam vapor, into the compression chamber C. The latter chamber extends upwardly under **13** from a lower point as defined by the lower extremity of horizontal collar **13***a*. If the outer vessel has water therein above the lower edge of collar **13***a*, the initial start of percolation occurs when the percolation pressure caused by the heated water within H has reached a stage when said percolation pressure is greater than the weight of said outer vessel water above said lower edge of collar **13***a*. Collar **13***a* has several functions, one being to help determine the start of percolation, as just explained. When the outer vessel water level is above the lower edge of collar **13***a*, as in Figure 2, upon a commencement of percolation, the percolation water builds up within compression chamber C and replaces the air trapped within that chamber above the lower edge of collar **13***a* by forcing it out ring-port **29**. Thereafter continued percolatiion water and steam entering compression chamber C from the top of tube **8** cannot escape fast enough out ring-port **29** to compensate for the percolation intake, and thereupon a percolation pressure or compression is formed within the compression chamber C under the dome-shaped cover, and thereby most of the water therein is forced to flow downwardly through the grounds and out extract ports **24**. Water forced out the ports **24**, having passed through the grounds G, comes out in the form of coffee extract liquid, and said extract being hotter than the surrounding water of the outer vessel **2** adjacent that point said extract fluid rises within that outer vessel, and as that flow occurs then colder water adjacent the outer floor of that outer vessel flows into the heater chamber H under cone **25** rim **27**. During continued percolation operation the formation of steam inceases and is discharged from the top of tube **8**, together with discharge of heated water therefrom, which stage is called maximum percolation operation, and in such stage steam accumulates within compression chamber C and causes a lowering of the water level therein to a horizontal level point even with the lower edge of **13***a* of cover **13**, at which point that steam pressure is momentarily discharged out ring port **29**. Upon such steam discharge the water level within unit **20** will be raised slightly due to a reverse flow of water from the outer vessel into the unit, caused by the displacement weight of the water of the outer vessel then above the lower edge of collar **13***a* and which weight is in excess of the percolation continued intake pressure within the unit. During that interval or stage of reverse flow, water enters the unit **20** through both the ring port **29** and also through the extract ports **24**, and said reverse flow continues until the continued percolation pressure compensates and exceeds that reverse flow pressure. It will thus be seen that the lower collar **13***a* lower edge extends downwardly, from the shoulder point **14**, the more such reverse flow occurs at that stage point, for the reason that same causes water to be displaced in the outer vessel before said steam discharge can occur. A small sized vertical collar **13***a* will cause little displacement, as just explained, and a large sized vertical collar will cause a greater displacement, with directly proportional reverse flow, respectively.

When the maker is placed in water of a sufficient depth to cover it, in the first instance an

air-lock occurs therein. It is to be borne in mind that there are two main chambers: the first is the heater chamber below the cone **25**; and the other is the compression or pressure chamber within the maker and under the cover. The latter chamber, or pressure action, takes place within the upper part of the interior of the maker. The lower part of the interior of the maker could be called the brewing portion of that chamber. The first occurring air-lock, just previously mentioned, will remain until enough percolation pressure has been formed within said compression-brewing chamber, from the steam vapor or hot water being generated by the heating unit at the base of the maker, to break it. At that time percolation starts. The amount of pressure necessary to force or break that air-lock is dependent upon the height of the water in the outer vessel above the point of the lower edge of the collar **13***a* of the lid, which is the vent ring-port outlet point. It is therefore obvious that the pressure formed above that ring-port vent outlet point is in direct relation to the height of the water in the outer vessel above that point or vent outlet. That height of water above said vent outlet point, in normal use, with an average size home maker and its outer vessel, is usually not over about three inches in depth thereabove, which represents about two ounces in weight. In such water depth, assuming operation is starting to take place, the air within the compression-brewing chamber is entirely eliminated, by being displaced by percolated water, and the maker is entirely submerged. It will be readily seen that no air can enter the maker from the exterior thereof at this stage, and that the interior of the maker will become filled with either or both steam vapor and hot water. In fact, at this stage, hot water, vapor and steam are all entering the compression or brewing chamber from the top of the percolating tube **8**. The water entering that chamber falls down on the beverage material G, which has been placed on the filter **15**. The hot water, vapor and steam, as the case may be, or any one or more of them, formed within the maker, causes the water accumulating over the material G to lower through that material and out extract ports **24**. Vapor or steam accumulating above the water within the maker will exert a pressure over the entire face of that water, and also over the entire surface of the compression chamber thereabove. If that pressure is too great, it will form in the tube and tend to stifle continued percolation. It is obvious, therefore, that the amount of steam vapor and hot water accumulating in the compression chamber from tube **8** must never be great enough to interfere with the proper continued percolation of water up the tube into the compression-brewing chamber C. To assure such, I provide for a proper continuation of the maximum flow possible, from the tube **8** into the compression-brewing chamber, by preforming the horizontal cross-sectional area of that tube of a certain size with relation to the total escape area of the constantly open ring vent or exhaust port **29**. The diameter of that tube and the area of that ring vent port must be formed of proper proportion, with relation to each other, as herein otherwise explained, to permit a rapid start of percolation and also continuation of the initial stages thereof, by permitting sufficient exhaust escape out the ring port, but yet not interfering with that pressure causing the water within the brewing chamber to be forced downwardly through the material G, as hereinafter explained.

In other words, the amount of steam and vapor accumulated within the compression-brewing chamber must never exceed the total escape area of the ring or vent port **29** enough to interfere with the proper ebulation of water up tube **8** into the compression-brewing chamber, but this statement is not to be construed as meaning that said steam and vapor pressure does not exceed said exhaust port ring escape area. There must be enough excess steam and vapor pressure within said chamber to force the water down through the material G and out extract ports **24** against the weight or pressure of the water in the outer vessel above said extract ports point. It can now be understood that the steam and vapor pressure within said chamber, to so force the water down through G and **24**, is of an amount comprising the difference between the total water, steam and vapor pressure accumulating in the compression-brewing chamber and the total thereof which escapes through exhaust ring port **29**. In other words, that which does not escape out **29** must be sufficient to force the water down through the beverage material G and out **24** against the weight of the surrounding water in the outer vessel above **24**.

Upon the use of my maker **20** in an outer vessel having a shallow water depth therein, or of a water level in the outer vessel below the lower edge of collar **13***a* at all times during operation of my maker, such reverse flow of water from the outer vessel, last described as occurring when that water level in the outer vessel is above that lower edge of collar **13***a*, will not occur. Continuous percolation operation, with such outer vessel water depth, will cause one-directional extract flow out ports **24**, since a steam exhaust, previously explained, out ring port **29**, will not cause any displacement of water in the outer vessel when that exhaust occurs out port **29**. In such case, since there is no water in that outer vessel above the level of the lower edge of collar **13***a* which may be displaced, and, since such a displacement is the cause of such reverse flowing operation, no reverse flow would occur. While such a steam exhaust out ring-port **29** does occur, upon maximum percolation operation previously explained with the water level in the outer vessel of a depth or level below the lower edge of collar **13***a*, some of the water within the maker will nevertheless thereafter continue to be forced downwardly and out the extract ports **24** in a one-directional percolation continuous flow operation.

It is to be noted that I construct the maximum, or overall, horizontal cross-sectional escape area of my novel ring-port **29**, between the inside of collar **13***a* and the outside vertical wall of the cup **21**, of an area less than the horizontal cross-sectional area of percolation tube **8**. That results in full percolation operation causing more percolation vapor and water volume to enter chamber C than is able to be discharged or exhausted out said ring port **29**. That construction causes a part of said volume, in the form of water, to be forced downwardly through the grounds and out screen **15** and extract ports **24** as its only other avenue of escape. Extract ports **24** have a combined area greater than the horizontal cross-sectional area of tube **8**. I have spoken of the outer vessel **2** being an open-type vessel, and by that is meant one having free communication with the surrounding air pressure.

It will thus be seen that, in this modification of my novel beverage maker, I provide a novel

frictionally held removable cover, together with a novel ring port always held fixedly open, and in association with that cover construction, as the only single escape port, other than the extract port, for the beverage maker. It is further to be noted in connection with the operation of my novel maker, heretofore explained, that the operation there explained was when the maker is used in the preferred manner, namely by starting the operation with water taken from the hot water faucet of an average hot water temperature of not over about 170 degrees. Starting the operational use of my maker with such temperature water in the outer vessel **2** results in the desired resultant coffee being made of sufficient average strength before all of the surrounding water in the vessel **2** commences to boil, and so the maker **20** is usually removed from that outer vessel before that boiling point is reached. Should, however, my maker **20** be used with or left in boiling water, for any appreciable length of time, such boiling water will produce a unique action by the maker **20**. In such case the maker **20** will alternately first rise or float in the outer vessel and then lower to the floor, repeating that action for a time, and then ultimately it will rise to the top of the liquid or float and remain there, if the water in the outer vessel is of a depth substantially to cover ring port **29** or well above the point of my extract ports **24** when the maker rests on the floor of the outer vessel. That so-called alternate floating of my maker, upon such boiling of the water in the outer vessel, will now briefly be explained. Boiling produces, ultimately, an excess or greater amount of steam within chamber C than can escape out the ring port **29**. That results in causing the water within the maker **20** to be lowered completely by the steam and exhausted by the steam out the lower extract ports **24**, by all of the water within the maker being forced out said ports **24**. That effects a bouyancy within the unit which raises it off of the floor of the outer vessel, causing it to float momentarily with is cone well above the floor of the outer vessel. In such initial elevational floating of the unit, last explained, percolation stops and the steam within the unit is cooled and condenses, and a vacuum is formed thereby which in turn causes water from the outer vessel to reenter the unit **20**, through ports **29**, **24** and tube **8**, thus causing a quick return of the unit down into the water and onto the floor of the outer vessel. Thereupon percolation is resumed, and the floating operation just explained repeats, and said cycle continues until the boiling reaches that high speed where percolation of steam into chamber C occurs even when the maker is uppermost or floating. At the latter stage the maker then stays in a floating position, because it is filled with steam faster than the steam can be discharged. When the operator discovers such a boiling and floating of the unit, just described, the heater element below the floor of the outer vessel will then be either turned off or removed, or the maker removed from the outer vessel. Ordinarily sufficient strength coffee will have been made long before such continuously floating stage of the maker is reached. The overall escape area of ring-port **29** will, to a large degree, determine the point when such a boiling will cause such floating, just described. The larger that escape area the longer before such floating will start, upon boiling point being reached, and conversely. On the other hand, as will be understood from the prior explanation of the operation starting with temperate non-boiling water in the outer vessel, too large a ring-port **29** escape area will slow up the initial percolation operation.

Having thus illustrated and explained a preferred embodiment of this modification of my maker unit in detail, and since many changes may be made therein without deviating in the scope thereof, it is to be understood that I wish to be limited in the definition, spirit and scope of my invention only by and within the definition of the hereunto appended claims.

What I claim and desire to secure by Letters Patent is:

1. In combination with an outer larger open type vessel of liquid, a pressure beverage maker inserted into and resting on the floor of said vessel having heat applied to said floor, comprising a non-porous unitary member having a top, side wall and bottom component parts, said bottom having an opening and a conically defined heater chamber below the opening, tube means extending the opening upwardly within the maker to a point adjacent its top, dwarf leg means associated with the bottom for spacedly holding the heater chamber off the floor of the vessel, an extract port formed in the outer surface of the maker adjacent its lower portion and above the heater chamber, an annular pressure exhaust escape port adjacent the top of the side wall and being restricted in over-all escape area in proportion to the horizontal cross-sectional area of the tube means, the combined areas of said ports being larger than said tube means cross-sectional area, porous filter and beverage material holder means associated with the bottom portion and positioned within the maker below said annular port and above said extract port, one of said top, side wall and bottom parts being frictionally and removably joined together with relation to another thereof, and means for effecting such juncture.

2. In combination with an open type larger-diameter outer vessel having relatively cool liquid therein and a heater unit thereunder, an alternate two-way flushing beverage maker rested on the floor of said vessel with said liquid of sufficient depth to equal the height of the maker and with heat applied to the vessel floor, comprising, a unitary member having a non-porous top, side and bottom portions, the bottom portion having a cone-shaped heater chamber having a central opening therein, spacer means associated with the maker for spacedly holding the heater chamber above the floor of the vessel, a tube extending the opening well up within the member adjacent its top, a porous beverage material holder and filter element associated with the tube and positioned within the maker above said bottom portion, a plurality of extract ports formed in the bottom portion below said material holder-filter and above said heater chamber, the over-all area of said ports being greater than the horizontal cross-sectional area of said tube, a single ring-type pressure exhaust port formed by association between the upper edge of the side and the top portions, said side and top portions being removably secured together, and snap-collar means for effecting said juncture and association of the top and side portions, said single ring port having an exhaust area less than the said cross-sectional area of said tube, the interior of the maker comprising a pressure chamber for effecting repeated alternate directional liquid flow through all of said ports

before the liquid in the outer vessel reaches boiling temperature.

3. In combination with an outer open type larger-diameter vessel having liquid therein originally of substantially less than boiling temperature and a heater unit thereunder, a pressure beverage maker resting within the vessel and comprising a removable cover and a cup-shaped member, the cup member having a conically shaped heater chamber portion associated with its floor and a central opening from said chamber through said floor, a tube extending said opening upwardly to adjacent the plane of the top edge of the member, the cover having an annular downwardly extending vertical flange adapted to surround the exterior of the cup in restricted spaced relationship therefrom, the area within the member and under the cover above the plane of the lower edge of the annular flange of the cover comprising a compression chamber, the space between the inside of the annular flange of the cover and the outside of the adjacent cup comprising a single pressure exhaust ring port when the cover is placed on the cup and having less exhaust area than the horizontal cross-sectional area of the tube, spacer boss means extending from the inner side of the cover and adapted for abutting the top edge of the cup for holding said ring port constantly open when the cover is placed on the cup, friction means for removably securing the cover tightly on the cup with said boss means seated on said edge, extract ports formed adjacent the lower portion of the cup and above said heater chamber portion, means for holding the floor of the maker a spaced distance above the floor of the vessel for permitting free liquid flow into the heater chamber, and a beverage holder and filter removably positioned within the cup above said extract ports and well below the ring port, the combined areas of the extract ports being greater than the horizontal cross-sectional area of the tube.

4. A beverage brewer comprising an outer open vessel, and a pressure non-boiling beverage maker placed in the vessel a small distance above the floor of the vessel, said vessel having non-boiling liquid therein sufficient to cover the maker and heat applied to the vessel floor, the maker comprising, a cup-shaped member including an inverted funnel-like portion below and associated with the bottom of the cup, the cone portion of the funnel comprising a heater chamber and the tube portion thereof extending upwardly within the cup to adjacent the plane of the top edge of

the cup, extract ports formed in the cup adjacent its lower outer portion and above said heater chamber and of a combined area greater than the horizontal cross-sectional are of the tube portion, filter and beverage holder means within the cup and being positioned above said ports, a removable cover frictionally held over the top of the cup, tension friction means for so holding the cover including means for spacedly holding a portion of the cover in fixed annular ring-port relationship with a portion of the top of the cup, said means being associated with the cover and some portion of the cup, said ring-port comprising a pressure exhaust port and being positioned well above said extract ports, and means for holding the maker a small distance above the floor of the vessel, the upper area within the maker, cooperating with the liquid seal resulting from operation of the brewer, comprising compression chamber means for effecting automatic intermittent and alternate liquid flow up and down through the beverage material held by the beverage holder-filter before the liquid reaches a boiling point, said filter-holder means being positioned below the ring-port, said ring-port having a total exhaust escape area which is smaller than the horizontal cross-sectional area of the tube of the funnel portion.

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