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Bivens

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(45) **Date of Patent: Feb. 18, 2014**

(54) **FILTER ASSEMBLY FOR FRYER AND METHOD**

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(51) **Int. Cl.**
A47J 37/12 (2006.01)

(52) **U.S. Cl.**
USPC **99/408**

(58) **Field of Classification Search**
USPC 99/408
See application file for complete search history.

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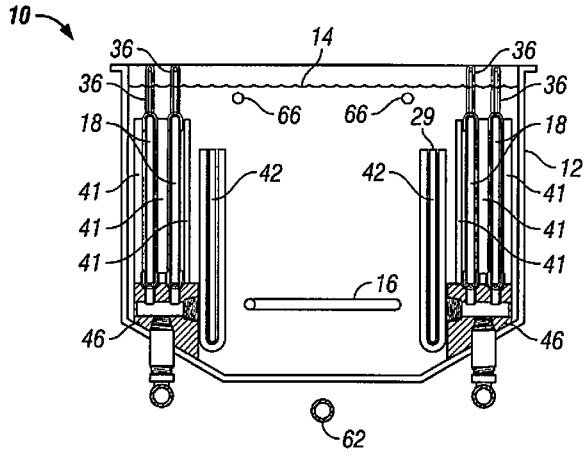
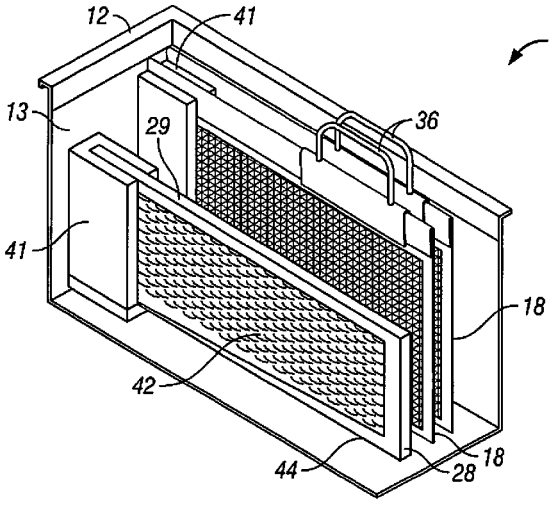
(57) **ABSTRACT**

A filter system for use in a fryer includes multiple filter apparatus in a container. The filter apparatus each comprise a filter assembly, and a manifold block. Each filter assembly has a drain bracket and drain fitting attached to the lower edge. The drain fitting is shaped to slidably fit into the manifold block. Multiple filter assemblies with associated valves are in fluid communication with a pump each valve operable to close fluid communication. Flow through a filter assembly may be shut off for removal or replacement of the filter assembly during continued operation of the fryer and continued filtration by another filter assembly.

15 Claims, 8 Drawing Sheets





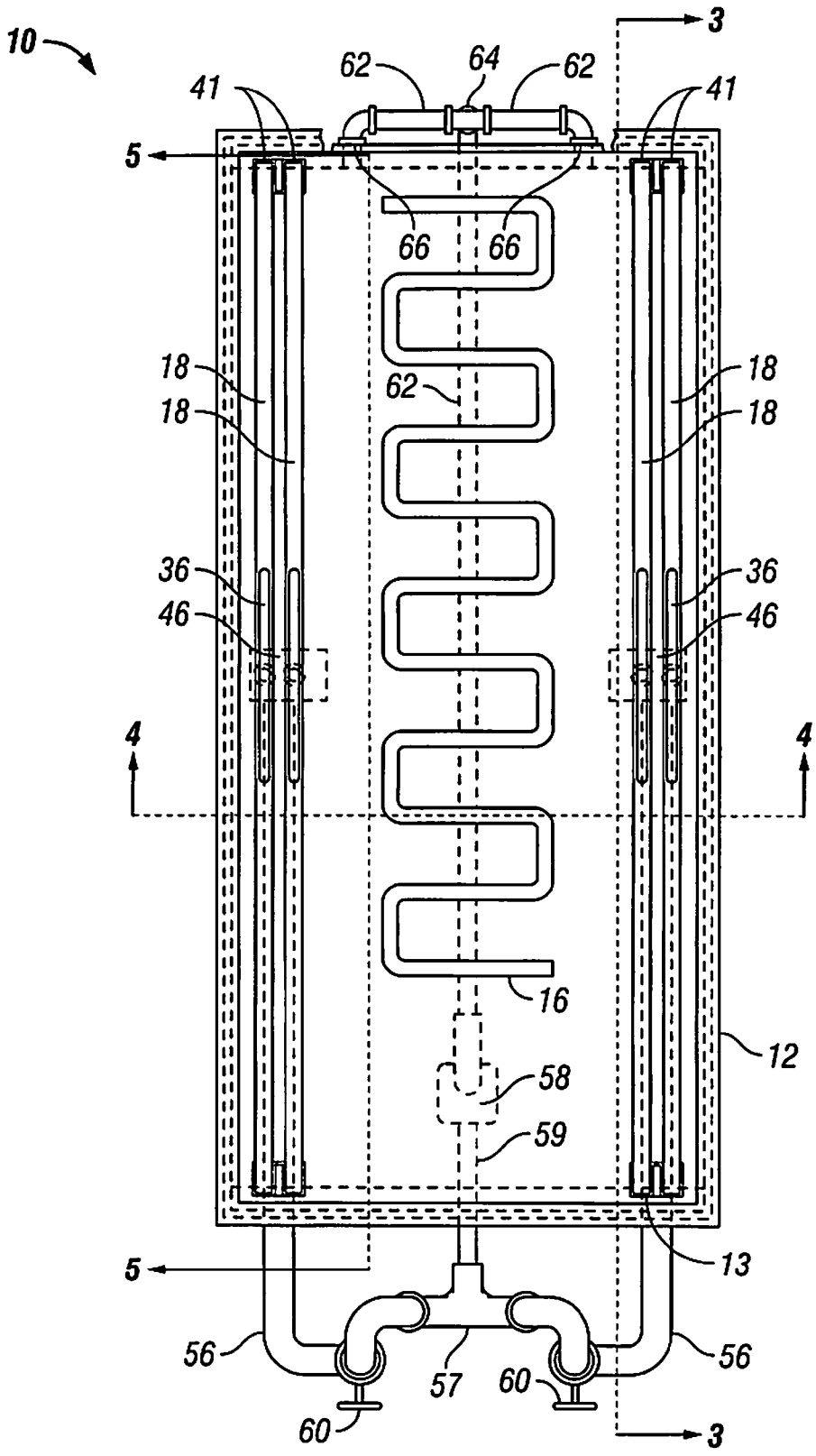

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FIG. 1

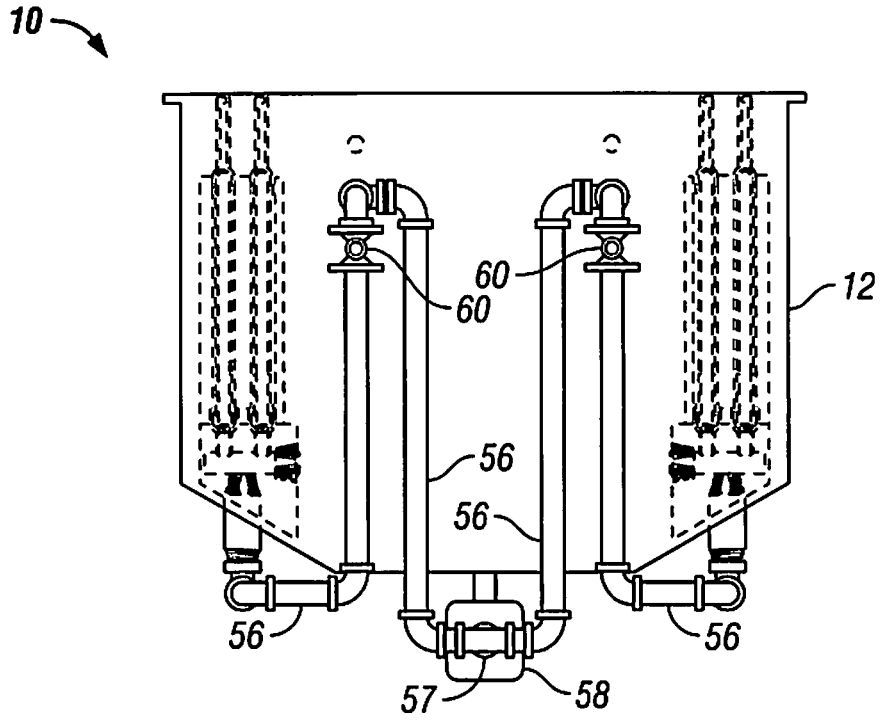

FIG. 2

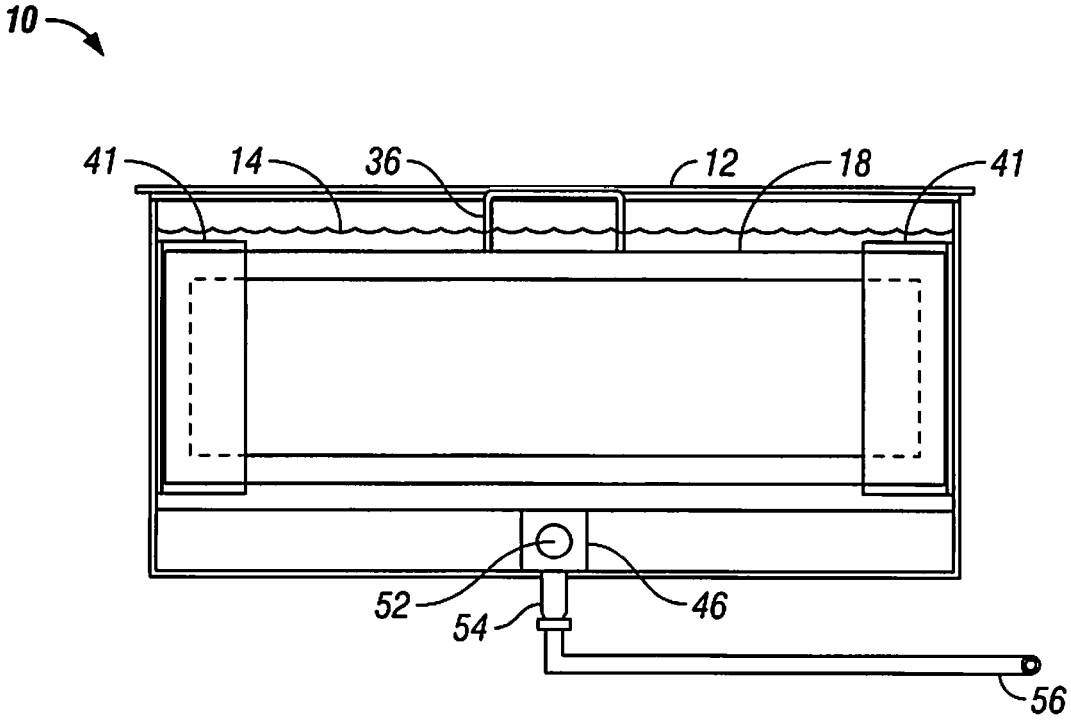

FIG. 3

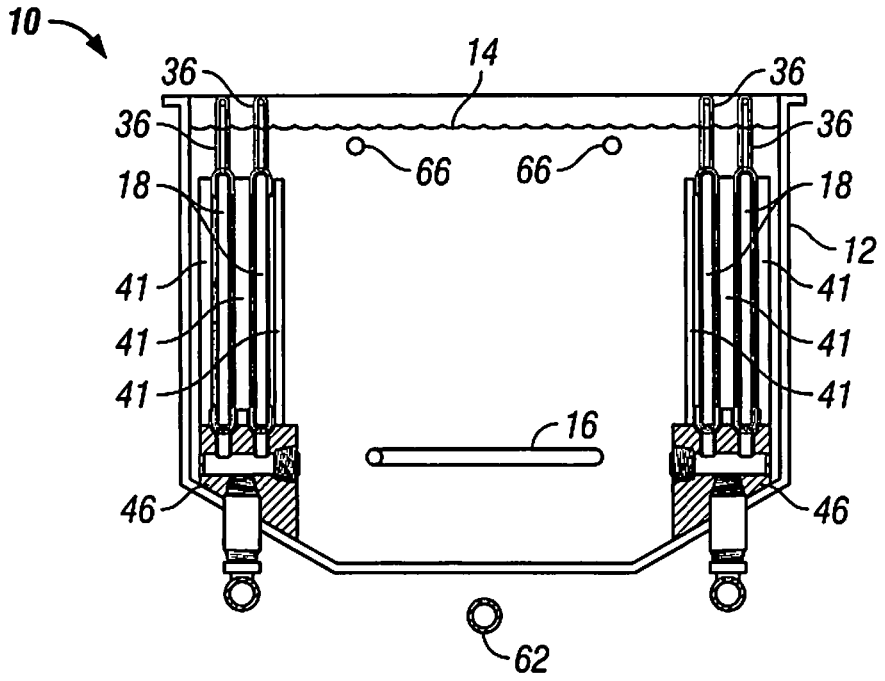
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FIG. 4

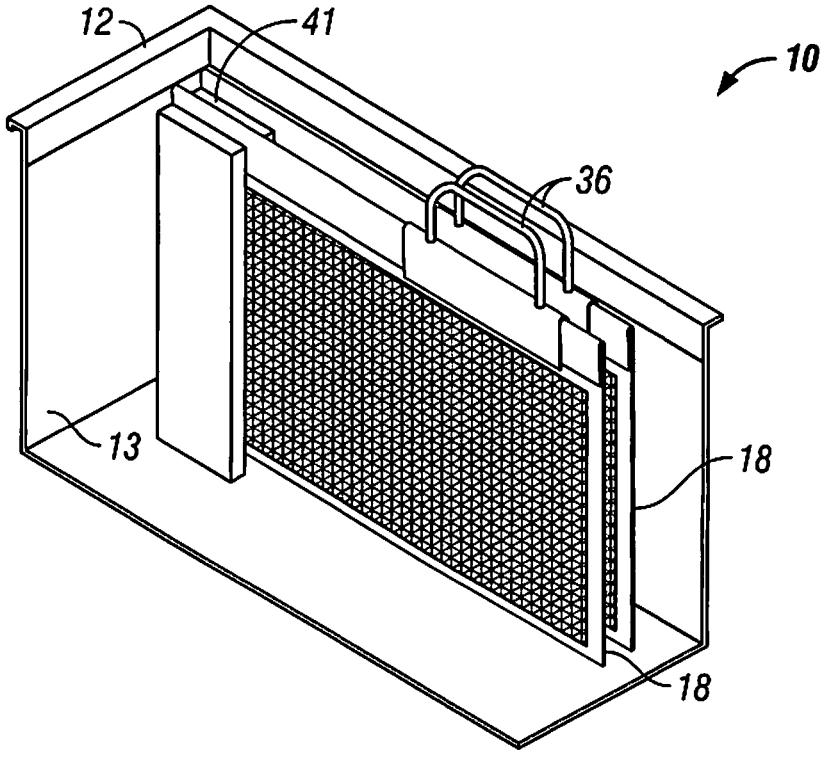
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FIG. 5

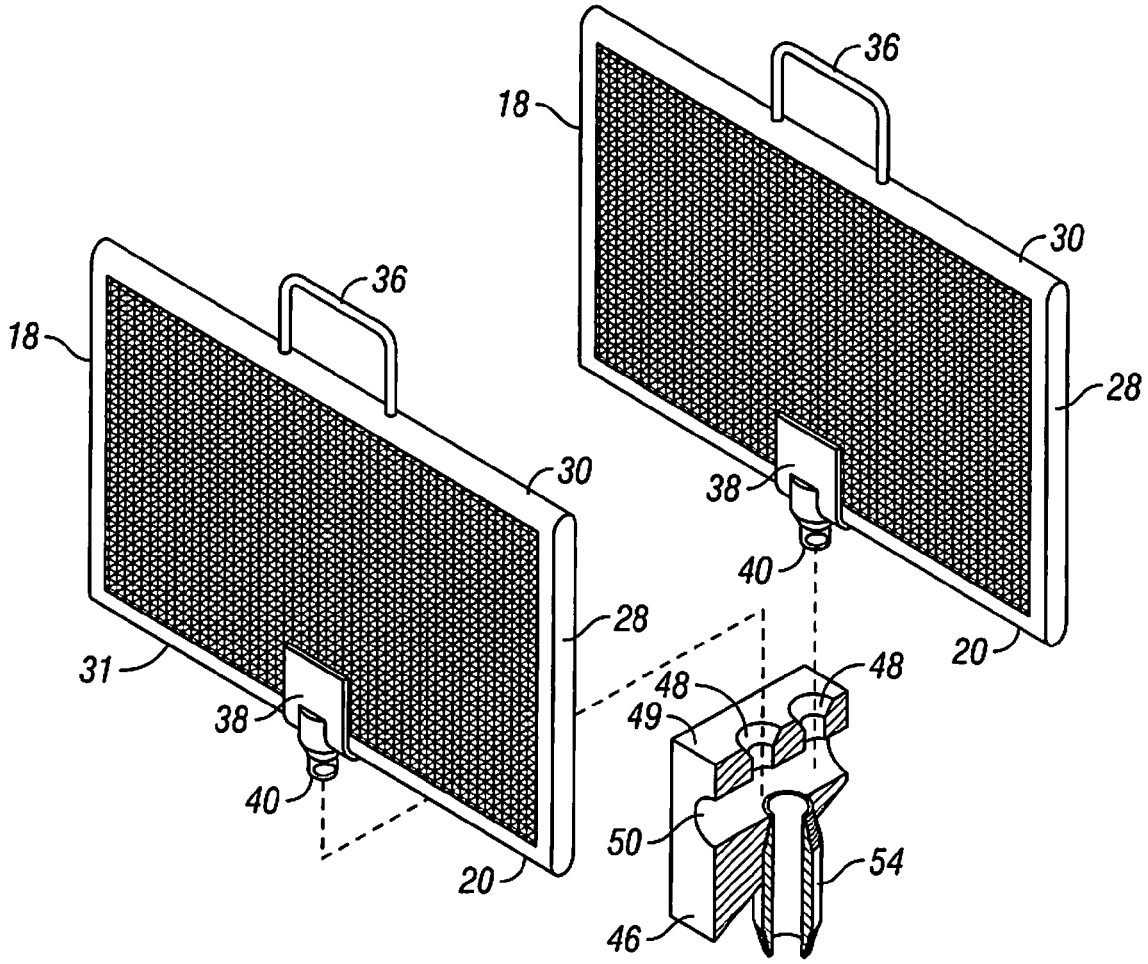

FIG. 6

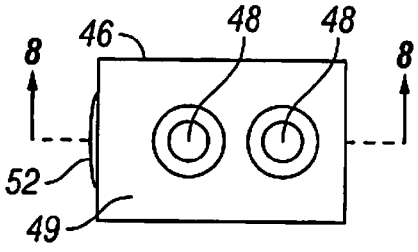

FIG. 7

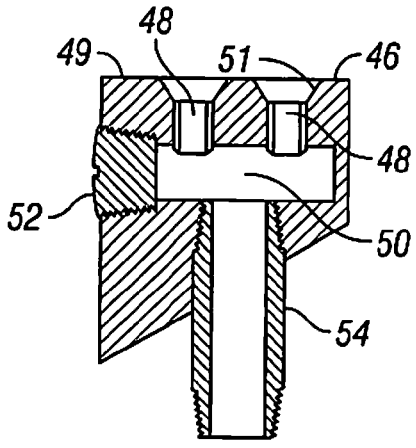

FIG. 8

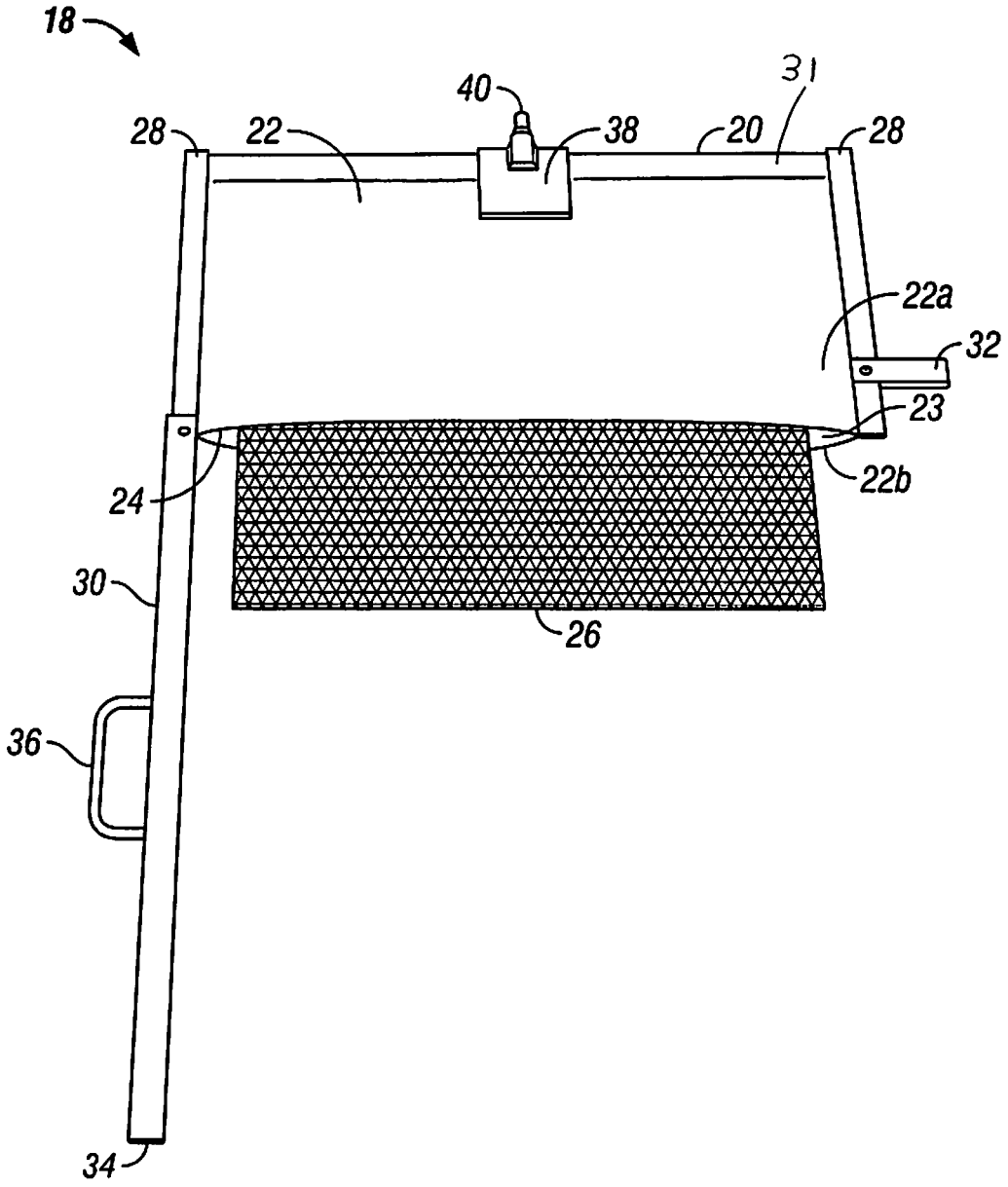

FIG. 9

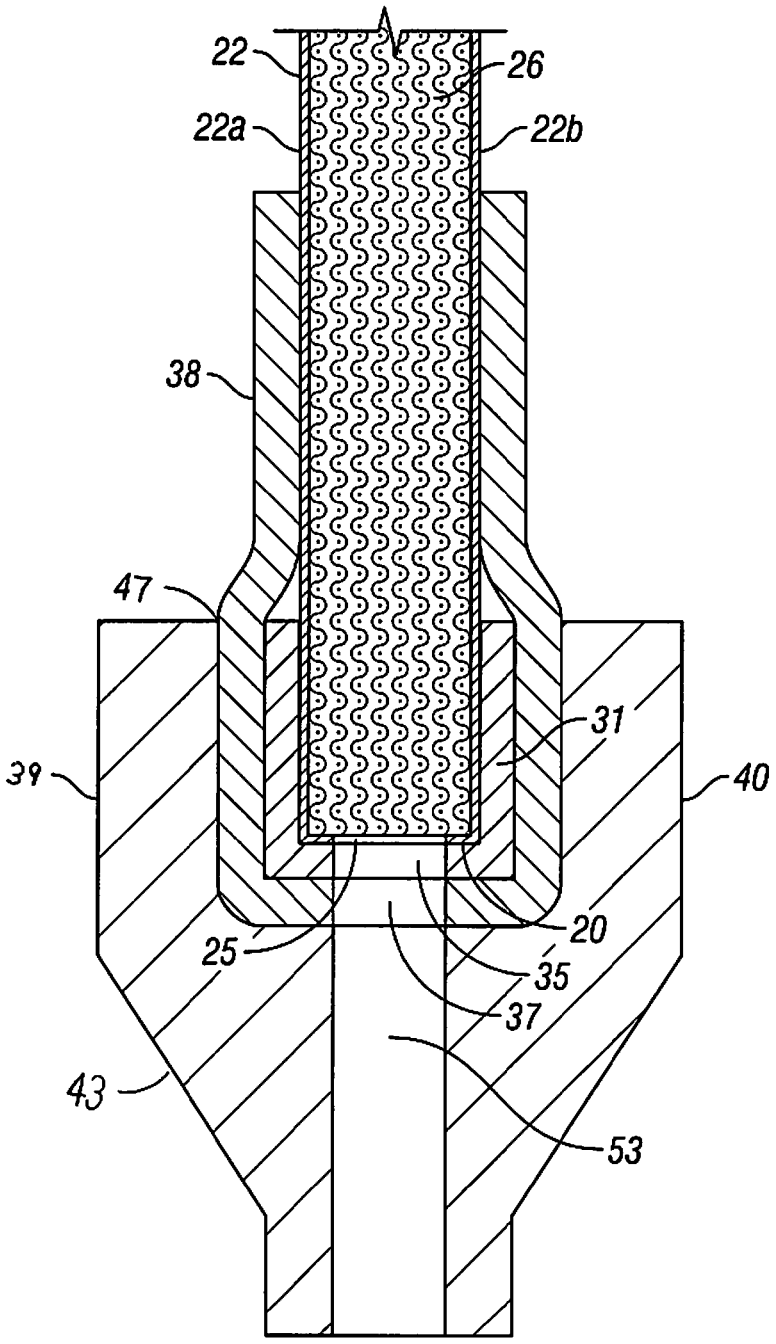

FIG. 10

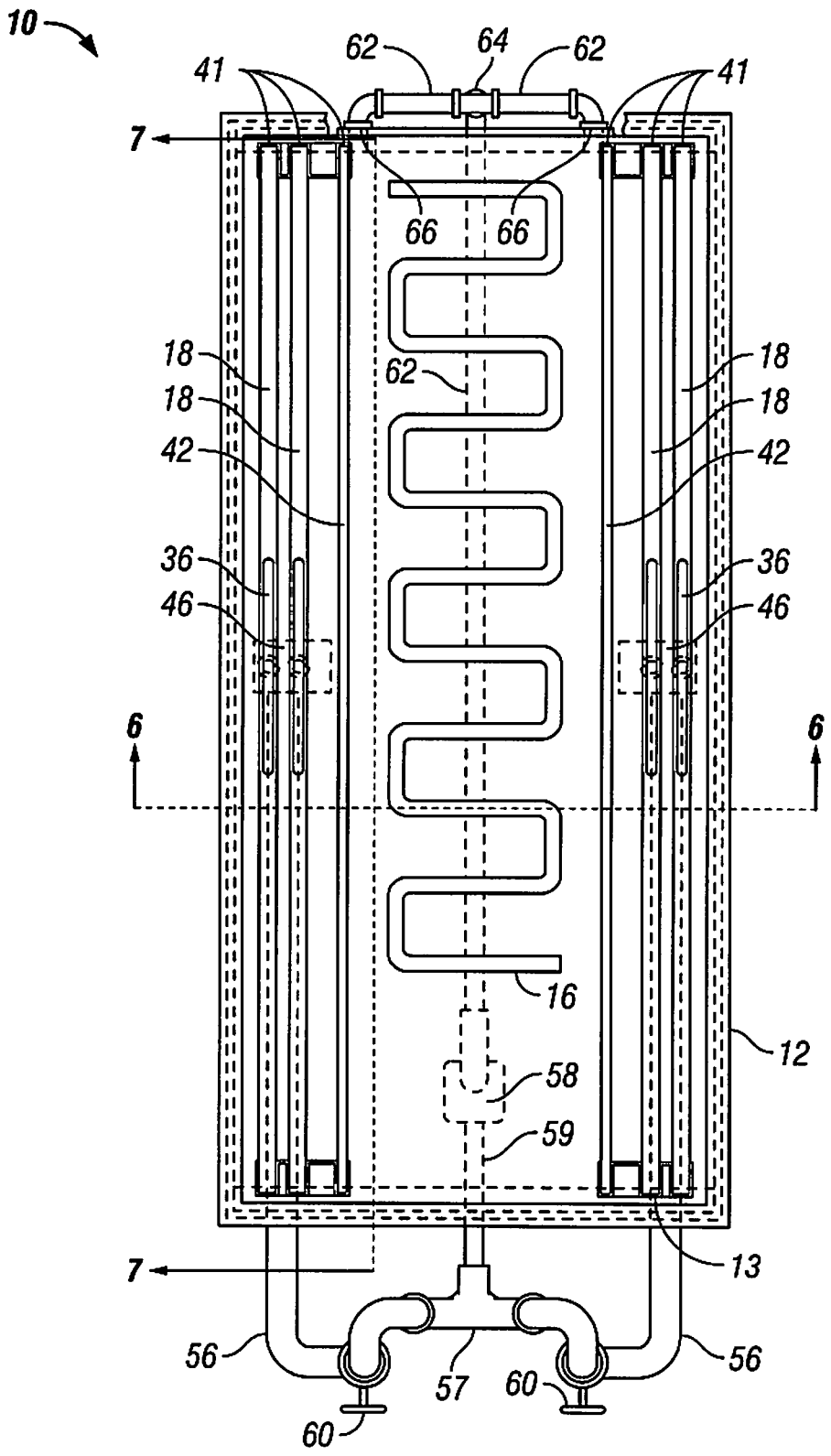
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FIG. 11

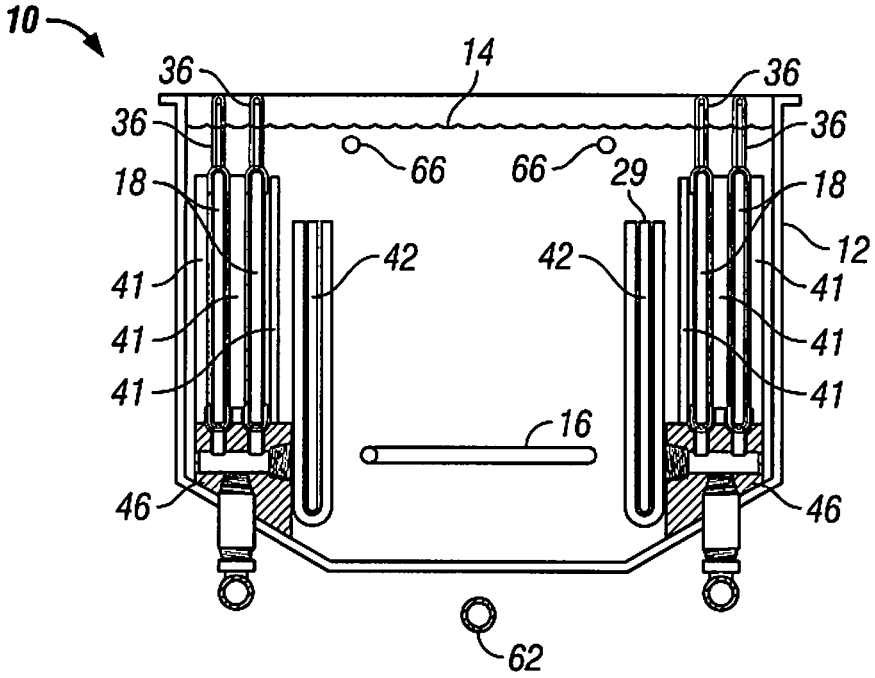
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FIG. 12

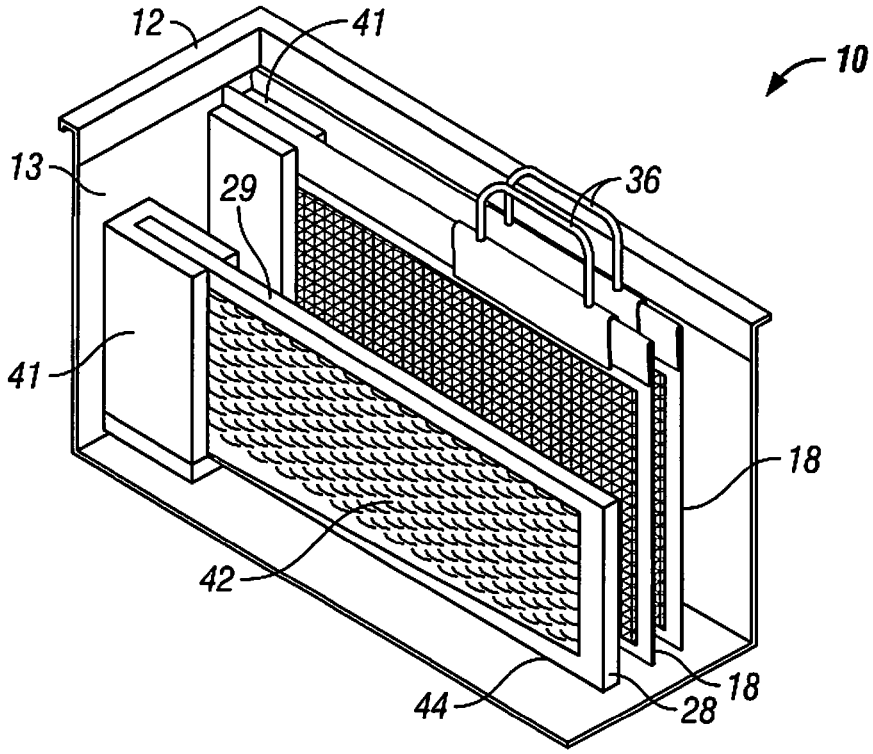
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FIG. 13

FILTER ASSEMBLY FOR FRYER AND METHOD

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of Provisional Patent Application Ser. No. 60/983,059, entitled "Liquid Filtering Apparatus," filed Oct. 26, 2007 in the United States Patent and Trademark Office by the present inventor, which is incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

BACKGROUND OF THE INVENTION

1. Field of the Invention

This application relates generally to the filtering of liquids in containers, and, more specifically, to an improved liquid filter apparatus.

2. Description of the Related Art

Cooking oil is extensively used in the food industry to cook comestibles. Animal fat, vegetable oil or other suitable material may be used as the cooking material. The term "cooking oil" is used herein to designate any such material.

Frying is frequently accomplished in relatively deep containers with the comestible to be cooked immersed in the cooking oil. In cases where quantities of food are regularly cooked in such a manner, the cooking oil becomes contaminated with various particles of food or other impurities. Food particles become charred from continued exposure to temperatures used in frying operations. Such charred food particles produce an odor and adversely affect the taste of foods cooked therein. Degradation of the cooking oil by suspended contaminants may also have a negative effect on the health of the consumer.

To beneficially control free fatty acids, polymers, and other undesirable components in the cooking oil, suspended particles of comestibles should be removed from the cooking oil. Wire mesh strainers have been long known and used to remove particulate matter from cooking oil. Strainers have not been effective to remove sufficient particulate matter to provide particulate-free cooking oil, and only slightly prolong the usefulness of the cooking oil.

Many conventional systems for filtering cooking oil require that the cooking operation be interrupted for the filtering procedure to be accomplished. The cooking oil is typically removed from the fryer container, and filtered and returned to the fryer, or, alternatively is replaced. Continuous filtering systems allow filtering during the frying operation.

U.S. Pat. No. 2,635,527 to Overbeck discloses a deep frying strainer to be located at the bottom of the cooking oil container to strain food particles from cooking oil as the strainer is lifted from the container. Although beneficial to remove some particulate matter, the invention disclosed does not effectively remove smaller particulate contaminants.

U.S. Pat. No. Re. 34,636, reissued on Jun. 14, 1994, to the present inventor, describes a cooking oil filter apparatus which can be used to effectively remove particulates from the cooking oil. Cooking oil is drawn through wire mesh screens by applying suction at the filter interior. As the cooking oil is drawn through the wire mesh screens, the screen serves to remove particulates from the cooking oil. The particulate-free cooking oil is then drawn into an outlet and drawn through the tank to a pump. The pump passes the cooking oil back into the tank.

U.S. Pat. No. 5,404,799, issued on Apr. 11, 1995, and U.S. Pat. No. 5,486,370, issued on Jan. 23, 1996, both to the present inventor, describe cooking oil filter apparatuses and methods which can be used to effectively remove particulates from the cooking oil.

U.S. Pat. No. 2,760,641 to Miles, et al. discloses a portable filter apparatus for use in cleaning cooking oil or other liquids. Contaminated cooking oil is first drained from the cooking reservoir into a draw-off container. The filter is then submerged in the oil in the draw-off container. The oil is then pumped by the pump motor through the filter and pump. The pump discharges the oil through a discharge tube and into the cooking reservoir.

U.S. patent application Ser. No. 11/621,226 of the present inventor discloses a portable liquid filter apparatus for filtering cooking oil in a container. The apparatus includes a mounting bracket that supports a pump and attaches to the container. A filter element is placed in the container for filtering the liquid. The pump draws the liquid through the filter element and a suction tube and discharges it back into the container for reuse. This apparatus permits the filtering of the cooking oil during the cooking operation.

U.S. Pat. No. 6,955,118 B1, issued on Oct. 18, 2005, to the present inventor describes a filter mounting apparatus that allows the filter to be removed for cleaning while the oil is still hot. The patent discloses a slip fitting mounted to the filter assembly and a receiver.

BRIEF SUMMARY OF THE INVENTION

A filtering system for a continuous filtering fryer includes a plurality of filter apparatuses. Each filter apparatus comprises one or more filter assemblies and a manifold. Each filter assembly includes a screen defining a filter pocket, a filter insert in the filter pocket, a drain bracket attached to the filter screen, and a drain fitting. The filter assemblies are in fluid communication with a common pump by way of suction lines. Valves are provided in the suction lines to allow closing the fluid communication between each filter apparatus and the pump. An inlet line allows flow from the pump outlet to the fryer container.

Flow from each filter apparatus to the pump may be selectively interrupted to allow removal of an individual filter assembly while flow from one or more other filter apparatuses to the pump is maintained. Accordingly, the filtering system may be continuously operated while a filter assembly is removed and replace.

The filter apparatus includes a drain fitting attached to the filter screen and a manifold having an opening to allow slideable insertion and removal of the filter assembly.

In an exemplary embodiment a heat shield is provided intermediate a heating element disposed in the fryer and each filter apparatus.

Vertical, or substantially vertical, orientation of the filter screen with the drain fitting disposed at a lower edge of the filter screen and a handle disposed at an upper edge of the filter screen facilitates removal and insertion of the filter assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the exemplary embodiments of the invention, reference is now made to the

following Description of Embodiments of the Invention, taken in conjunction with the accompanying drawings, in which:

FIG. **1** is a top elevation view of an example embodiment.

FIG. **2** is a front elevation view of an example embodiment of FIG. **1**.

FIG. **3** is a cross-sectional view of an example embodiment, taken along line **3-3** in FIG. **1**.

FIG. **4** is a cross-sectional view of an example embodiment, taken along line **4-4** in FIG. **1**, with the manifold blocks shown in cross-section.

FIG. **5** is a partial, perspective view of an example embodiment, taken along line **5-5** in FIG. **1**.

FIG. **6** is an exploded, perspective view of a pair of filter assemblies and a manifold block of an example embodiment.

FIG. **7** is a top view of a manifold block of an example embodiment.

FIG. **8** is a cross-sectional elevation view of the manifold block, taken along line **8-8** in FIG. **7**.

FIG. **9** is a side view of a filter assembly of an example embodiment, partially disassembled.

FIG. **10** is a cross section of a portion of the filter assembly of FIG. **9** taken along line **9-9**, and a cross section of an outlet port.

FIG. **11** is a top elevation view of an alternate exemplary embodiment.

FIG. **12** is a cross-sectional view of an alternate exemplary embodiment, taken along line **4-4** in FIG. **11**, with the manifold blocks shown in cross-section.

FIG. **13** is a partial, perspective view of an alternate exemplary example embodiment, taken along line **5-5** in FIG. **11**.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

The exemplary embodiments and their advantages are best understood by referring to the drawings, like numerals being used for like and corresponding parts of the various drawings. In FIGS. **1-5** various views an embodiment of liquid filtering system **10** are depicted. Liquid filtering system **10** includes container **12** for holding liquid cooking oil **14**. In the illustrated embodiment, container **12** is a deep fat fryer tank with cooking oil **14** for frying foods therein.

A heating element **16** is installed within container **12** and below the surface of cooking oil **14** for heating cooking oil **14**. In the illustrated embodiment, heating element **16** is an electric heating coil.

In the embodiment disclosed, two filter apparatuses **11** are installed within container **12**, with one filter apparatus **11** on each side of heating element **16**. In the embodiment shown each filter apparatus **11** includes two filter assemblies **18**. Liquid filtering system **10** thus includes two filter apparatuses **11**, each having two filter assemblies **18**.

Each filter assembly **18** is vertically oriented in container **12** with a drain fitting **40** at a lower edge **20**. Each filter assembly **18** has a length dimension substantially equivalent to the length dimension of the interior of container **12**. The height of each filter assembly **18** is determined such that the upper edge of the filter assembly **18** is below the level of cooking oil **14** surface during frying operation of container **12**. Each filter assembly **18** is constructed to drain from its lower edge **20** at a drain fitting **40**.

Referring to FIG. **9**, filter assembly **18** includes at its perimeter side frame members **28** and upper frame member **30**. Upper frame member **30** is rotatably attached at one end to one of the side frame members **28**. Filter assembly **18** also includes a filter screen **22** having a pocket **23** therein opening at upper edge **24** of filter screen **22**. Filter screen **22** is framed by side frame members **28** and upper frame member **30**. Filter screen **22** is comprised of a filter screen material. In an exemplary embodiment, the filter screen material is a stainless steel wire mesh.

A filter insert **26** is inserted and contained within the pocket **23** of filter screen **22** when filter assembly **18** is assembled. After filter insert **26** has been fully inserted into pocket **23** of filter screen **22**, upper frame member **30** is rotated down so as to close the opening of the pocket **23** of filter screen **22**. Connector **32** is then rotated over the free end **34** of upper frame member **30** so as to retain it in the closed position. Filter insert **26** is sized and constructed to maintain separation of first side **22***a* of filter screen **22** from the opposed second side **22***b* of filter screen **22**. Filter insert **26** is constructed to allow free flow of liquid within pocket **23**. In an exemplary embodiment, filter insert **26** may be constructed of a slitted grid material, the slitted grid formed generally by providing parallel slits in a metallic plate and deforming the area between the slits to provide alternately raised and lowered sections in the plate. The slitted grid provides multiple passageways for fluid flow through pocket **23**.

Filter screen **22** may be formed of a single section of material folded to define lower edge **20**. To provide additional strength, a lower frame **31** may be attached to filter screen **22** at lower edge **20**. An exemplary lower frame **31** is depicted in FIGS. **6**, **9** and **10**. Alternatively, filter screen **22** may be formed of separate segments **22***a* and **22***b* with the separate segments **22***a* and **22***b* retained by side frame members **28**, upper frame member **30** and lower frame member **31**.

A drain bracket **38** is fastened to filter screen **22** at lower edge **20**. A drain fitting **40** is attached to drain bracket **38**. The drain fitting **40** extends from the filter screen's **22** lower edge **20** for draining filtered cooking oil **14** from filter assembly **18**.

Referring to FIG. **10**, a detailed cross section of drain bracket **38** and drain fitting **40** attached to filter screen **22** is shown. Filter insert **26** is shown inside filter screen **22**. Filter assembly **18** has a lower frame member **31**. Lower frame member **31** is positioned around the bottom edge of filter screen **22**. Drain bracket **38** is attached around lower frame member **31** and extends above lower frame member **31**. Where drain bracket **38** extends above lower frame member **31**, drain bracket **38** is abutting filter screen **22** to provide more secure attachment to filter screen **22**.

In the event filter screen **22** is folded at lower edge **20** without attachment of a lower frame **31**, drain bracket **38** is attached directly to filter screen **22**. Drain fitting **40** comprises an upper section **39** and a tapered lower insert segment **43**. A bore **53** extends through upper section **39** and tapered lower insert segment **43**. A notch **47** is formed in upper section **39**. Notch **47** and drain bracket **38** are sized and constructed such that drain bracket **38** is received in notch **47**. Drain fitting **40** is attached to drain bracket **38** at notch **47**.

An opening **25** is provided in lower edge **20** of filter screen **22**. An opening **35** is provided in lower frame member **31**. An opening **37** is provided in drain bracket **38**. Opening **25**, opening **35**, opening **37** and bore **53** are aligned to allow flow of liquid from pocket **23** through opening **25**, opening **35**, opening **37**, and bore **53**.

Referring to FIGS. **1**, **4**, and **5**, each side frame member **28** of each filter assembly **18** slides into a corresponding channel **41** attached to an interior end wall **13** of container **12**. Channels **41** are provided in opposing walls **13** of container **12**. Accordingly filter assemblies **18** are held in vertical positions in container **12**. Depending on the orientation required, channels **41** may be arranged other than vertically to allow orientation of filter assemblies **18** at other than vertical orienta-

tions. The sliding connection of each side frame member **28** with each corresponding channel **41** is loose enough to allow ready insertion and removal of filter assembly **18** in container **12** using handle **36**.

Handle **36** is attached to upper frame member **30** near its center. Handle **36** facilitates removal of filter assembly **18** from container **12**, and its replacement therein.

Referring to FIGS. **1**, **4**, **6**, **7** and **8**, manifold blocks **46** are installed at the bottom of container **12** to receive drain fittings **40** of filter assemblies **18**. Upper surface **49** of each manifold block **46** is provided with two countersunk receiver openings **48** for receiving each of the drain fittings **40** attached to drain brackets **38** on filter assemblies **18** when filter assemblies **18** are installed in container **12**.

Drain fitting **40** includes a tapered lower insert segment **43**. Insert segment **43** is sized to fit in receiver opening **48**. Countersunk receiver opening **48** is provided with inclined wall **51**. Tapered insert segment **43** and inclined wall **51** are sized and constructed to allow sliding insertion of segment **43** in receiver opening **48** and sliding removal of segment **43** from receiver **48**. Upon insertion of segment **43** into receiver opening **48** a close fit is obtained between at least a portion of segment **43** and a portion of receiver **48**.

As best seen in FIGS. **6** and **8**, a lateral bore **50** is provided in each manifold block **46**. Receiver openings **48** connect to lateral bore **50**, providing an opening for fluid flow from each pair of filter assemblies **18** through lateral bore **50**. As best seen in FIG. **8**, plug **52** closes an open end of lateral bore **50**, preventing fluid flow therethrough. Threaded nipple **54** installed in manifold block **46** connects bore **50** with a suction tube **56**, described herein.

Referring to FIGS. **1**, **2**, and **3**, pump **58** is provided. In the exemplary embodiment, pump **58** is operated by an electric motor (not illustrated) from a manual or remote switch (not illustrated). Suction tube **56** is connected to pump **58** and provides fluid communication between manifold blocks **46** and pump **58**. The inlet ends of suction tubes **56** are thus in fluid communication with filter assemblies **18**, and the outlet ends of suction tubes **56** are in fluid communication with pump **58**. In the exemplary embodiment, suction tubes **56** from the pairs of filter assemblies **18** on the opposite sides of container **12** join at T-fitting **57**, which leads to pump **58** through a common suction tube **59**.

As seen in FIGS. **1** and **2**, a shut-off valve **60** is installed in each suction tube **56** that is connect to a manifold block **46**. Each shut-off valve **60** permits a user to shut off fluid flow in the corresponding suction tube **56**. Accordingly, a selected pair of filter apparatus **11** may be shut off from pump **58**, and thus taken out of operation, while the other filter apparatus **11** remains in use for filtering cooking oil **14**. Thus, filtering of the cooking oil **14** may continue during frying operations of the container **12** by use of the filter assemblies **18** in fluid communication with pump **58** while the disconnected and non-operating filter assemblies **18** are removed from container **12** for cleaning, servicing, or replacement.

As seen in FIGS. **1** and **3**, the filtered cooking oil **14** is returned to container **12** for continued use in a frying operation through discharge tube **62**. The inlet end of discharge tube **62** is connected to the discharge port of pump **58**. In the exemplary embodiment shown, discharge tube **62** connects to a discharge T-fitting **64**, from which a pair of discharge tubes **62** lead to inlet ports **66** installed in the wall **13** of container **12**. Inlet ports **66** are located below the surface of the cooking oil **14** to prevent splashing of hot cooking oil **14** returning into container **12**. In various embodiments, suction tube **56** and discharge tube **62** are made from aluminum, stainless steel, or other suitable material.

In an alternate exemplary embodiment shown in FIGS. **11**, **12** and **13**, a pair of heat shields **42** are installed in container **12**. Each heat shield **42** is positioned intermediate a filter assembly **18** and heating element **16**.

A primary purpose of heat shields **42** is to reduce charring of comestible matter (not shown) collected on each filter assembly **18**. During operation filter assemblies **18** each collect particulate matter, including flour and other comestible bits on the surface of filter screens **22**. During operation, the temperature of the cooking oil **14** is hottest proximate heating element **16**. Heat shields **42** prevent direct flow of cooking oil **14** from heating element **16** to filter assemblies **18**, thus preventing the matter retained on filter screens from the higher-temperature cooking oil **14** immediately adjacent heating element **16**.

Heat shields **42** may further be constructed to orient flow within container **12** in a desired pattern.

In the exemplary embodiment, each heat shield **42** has a length dimension extending substantially the length dimension of filter assemblies **18**. As best seen in FIG. **13**, each heat shield **42** is generally rectangular and planar in shape. A metallic plate of stainless steel or aluminum has been proven to be suitable for use as a heat shield at temperatures incurred in cooking oil **14** applications.

In the exemplary embodiment shown, each heat shield **42** is constructed such that the upper edge **29** of the heat shield **42** is below nominal surface level of cooking oil **14** within container **12**. Each heat shield **42** is constructed to allow fluid flow intermediate a lower edge of the heat shield **42** and the bottom of container **12**.

In an alternative embodiment (not illustrated), heat shields **42** may extend vertically only a short distance above the height of heating element **16** and a short distance below the height of the bottom of heating element **16**. In this embodiment, heat shields **42** still protect filter assemblies **18** from direct flow of cooking oil **14** from heating element **16**, while allowing free indirect flow between heating element **16** and filter assemblies **18**.

In the illustrated embodiment, heat shield **42** includes peripheral frame **44**. Referring to FIGS. **11**, **12** and **13**, the lateral edges of heat shields **42** slide into extruded channels **41** attached to the interior end walls **13** of container **12** for retaining heat shields **42** in their upright positions in container **12**. Heat shield **42** may include handle **45** (not shown) on its upper edge near its center for facilitating the removal of heat shield **42** from container **12**, and its replacement therein.

In operation, when contaminated cooking oil **14** in fryer tank **12** is to be cleaned, pump **58** is started.

Pump **58** creates a negative pressure in suction tubes **56** and manifold blocks **46**. The negative pressure helps to secure drain fittings **40** in receiver openings **48** in manifold blocks **46**. A seal is created between drain fittings **40** and the walls **51** of countersunk receiver openings **48**.

Pump **58** draws cooking oil **14** through filter assemblies **18**, openings **25**, openings **35**, openings **37** and into bores **53**. Contaminants in the cooking oil **14** are blocked by filter screens **22** of filter assemblies **18**. Generally, such contaminates accumulate on the exterior surfaces of filter screens **22**.

From bores **53** the cooking oil **14** is drawn into bores **50** in manifold blocks **46**. The cooking oil **14** is then drawn from lateral bores **50** in manifold blocks **46** through nipples **54** to suction tubes **56**. Pump **58** draws the filtered cooking oil **14** through suction tubes **56** and passes it into discharge tube **62**. The cooking oil **14** is redeposited into fryer tank **12** through inlet ports **66** at the terminal ends of discharge tubes **62**.

Liquid filtering system **10** may be operated in a continuous manner for filtering the cooking oil **14** while the oil is kept at

cooking temperature, and while food is being cooked in container **12**. When a layer of contaminants has built up on the outer surface of filter assemblies **18**, a corresponding shut-off valve **60** may be closed stopping flow from the corresponding filter apparatus **11** and removing the associated pair of filter assemblies **18** from operation. The negative pressure in the associated manifold block **46** is abated. Each associated filter assembly **18** may be then lifted by its handle **36**. Each associated drain fitting **40** slides out of its associated receiver opening **48**. The subject filter assembly **18** is removed from container **12** for cleaning or replacement. The other filter apparatus **11** with its pair of filter assemblies **18** may remain in operation while the removed filter assemblies **18** are disengaged.

The disengaged filter assemblies **18** may be replaced in fryer tank **12**. Their associated drain fittings **40** are slid into the associated receiver openings **48** in the associated manifold block **46**. Their associated valve **60** is reopened, restoring the negative pressure in the associated manifold block **46** and securing the associated drain fittings **40**. Additionally, the negative pressure establishes a seal between the associated tapered lower insert segment **43** and inclined wall **51** of the associated receiver opening **48**. Cooking oil **14** is drawn through the installed filter assemblies **18**.

The above procedure may then be repeated to remove and clean or replace the other pair of filter assemblies **18**. By alternating removal and cleaning of pairs of filter assemblies **18** in this manner, the cooking apparatus may be used continuously if desired, without the necessity of a complete shutdown for filter cleaning purposes.

The exemplary embodiment describes use of two filter apparatuses **11** and four filter assemblies **18**. An additional filter assembly **18** may be used by providing, for example, an additional receiver opening **48** in a manifold.**46**. One less filter assembly **18** may be used by, for example, removing a filter assembly **18** and blocking a corresponding receiver opening **48**. More or less filtering capacity may be provided by varying the number and size of filtering assemblies **18**. Variation of filtering capacity may be obtained without replacement of pump **58**.

The liquid filter mounting apparatus of the present invention, and many of its intended advantages, will be understood from the foregoing description of example embodiments. Embodiments of the invention and their advantages have been described in detail using many specific parameters in order to disclose how to make and use the invention. Various changes, substitutions, and alterations may be made in the manner, procedure, and details of the embodiments described without departing from the spirit and scope of the invention or sacrificing any of its material advantages. Examples of such changes, substitutions, and alterations are given below but many other changes, substitutions, and alterations are also possible.

Various types of heating elements **16** can be used including, but not limited to, electric heating coils and gas heated tubes. An embodiment may have no heating element **16**.

Filter assemblies **18** may be of various length or height. Filter assembly **18** can have a length shorter or longer than container **12**. Filter screen **22** may consist of only a single filter surface. Filter screen **22** may have no peripheral frame.

Drain fitting **40** can have various types of internal bores or passageways providing fluid connectivity between filter element **18** and manifold block **46**. Drain fitting **40** and drain bracket **38** may be constructed as an integral unit.

Drain bracket **38** may be attached to filter assembly **18** by welding, soldering or other manner.

Manifold block **46** may be constructed as a unitary outlet port passing through the wall of container **12** and sized to recieveably fit drain fitting **40**. Manifold block **46** may be provided with a desired number of receiver openings **48**.

Various embodiments of the invention will be understood from the foregoing description, and it will be apparent that, although embodiments of the invention have been described in detail, various changes, substitutions, and alterations may be made in the manner, procedure and/or details thereof without departing from the spirit and scope of the invention, as defined by the appended claims, or sacrificing any of its material advantages, the forms hereinbefore described being merely exemplary embodiments thereof.

I claim:

1. A filter apparatus for a fryer, said fryer having a fryer container for containing cooking oil with at least one heating element disposed within said fryer container, said filter apparatus comprising:

at least one filter assembly disposed within said fryer container;

each said at least one filter assembly having a drain fitting extending therefrom;

at least one manifold disposed within said fryer container;

said at least one manifold each having at least one receiver opening in a manifold upper surface;

said at least one manifold each having a manifold bore therein, wherein said manifold bore is in fluid communication with said receiver opening

each said drain fitting having a fitting opening;

said fitting opening, said receiver opening, and said manifold bore structured to cooperatively provide fluid communication from said at least one filter assembly through said manifold bore;

each said at least one filter assembly selectively connectable to its respective said at least one manifold by functional coupling of each said drain fitting to the corresponding said receiver opening;

said at least one filter assembly comprises at least four filter assemblies;

said plurality of manifolds comprises at least two manifolds, wherein each said manifold has a plurality of said receiver openings; and,

said heating element is disposed intermediate at least two said first filter assemblies and at least two said second filter assemblies.

2. The filter apparatus of claim **1**, further comprising:

said at least one filter assembly having opposed side edges; and

each said side edge receivable in a container wall channel.

3. The filter apparatus of claim **1**, further comprising:

said drain fitting having a tapered lower end;

said receiver opening having a tapered wall; and

said fitting lower end receivable in said tapered wall.

4. The filter apparatus of claim **1**, further comprising:

each said filter assembly having at least one filter screen having a filter pocket therein;

at least one filter insert insertable into said filter pocket; and

said at least one manifold having at least two receiver openings in said manifold upper surface.

5. The filter apparatus of claim **1**, further comprising:

each said at least one filter assembly having opposed side frames; and

each said side frame receivable in a container wall channel.

6. The filter apparatus of claim **1**, wherein:

each said at least one filter assembly has a lower frame member; and

said drain fitting attached to said lower frame member.

7. The filter apparatus of claim 1, wherein:
each said at least one filter assembly having a drain bracket attached to said filter screen;
said drain fitting attached to said drain bracket; and
an opening in said drain bracket allowing fluid communication from said pocket through said drain fitting.

8. The filter apparatus of claim 4, wherein said at least one filter screen is formed of a single section of material that is folded to define said filter pocket; and wherein said filter insert is constructed to allow flow of liquid within said filter pocket.

9. A continuous filtering fryer system comprising:
a fryer container having a heating element therein;
at least two filter apparatuses disposed in said container;
each said at least two filter apparatuses comprising at least one filter assembly;
each said at least one filter assembly comprising a screen, a filter pocket and a drain fitting in fluid communication with said filter pocket;
at least one heat shield disposed within said fryer container intermediate at least one of said at least two filter apparatus and said heating element;
said heat shield extending substantially the length of said at least one filter assembly;
a pump;
said drain fitting in fluid communication with a pump;
an inlet in said container;
said pump in fluid communication with said inlet;
a valve intermediate each said filter apparatus and said pump;
each said valve selectively operable to control flow therethrough;
said at least one filter assembly comprises at least four filter assemblies;
at least two manifolds, wherein each said manifold has a plurality of said receiver openings; and,
said heating element is disposed intermediate at least two said first filter assemblies and at least two said second filter assemblies.

10. The continuous filtering fryer system of claim 9, wherein:
a said at least two manifolds having at least one receiver opening in each respective manifold's upper surface; and
each said drain fitting slideably receivable in a corresponding receiver opening.

11. The continuous filtering fryer system of claim 9, wherein:
each said filter apparatus further comprising a filter insert received in said pocket; and
each said manifold having a manifold bore; and
said manifold bore in fluid communication with said receiver opening.

12. The continuous filtering fryer system of claim 9, wherein:
each said filter apparatus further comprising a drain bracket at least partially intermediate said receiver fitting and said screen.

13. The continuous filtering fryer system of claim 9, wherein:
said at least one heat shield comprises a first heat shield and a second heat shield;
said first heat shield disposed intermediate said heating element and said first filter assembly; and
said second heat shield disposed intermediate said heating element and said second filter assembly.

14. The continuous filtering fryer system of claim 9, wherein:
each said heat shield comprising a planar member;
said container having a plurality of container walls;
said container walls having a plurality of wall channels; and
each said heat shield receivable in at least one of said wall channels.

15. The continuous filtering fryer system of claim 9, wherein:
each said heat shield comprising a planar member;
each said heat shield sized and constructed to prevent direct fluid flow from said heating element to each said at least one filter apparatuses; and
each said heat shield sized and constructed to allow fluid flow indirectly from said heating element to each said at least one filter apparatus.

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