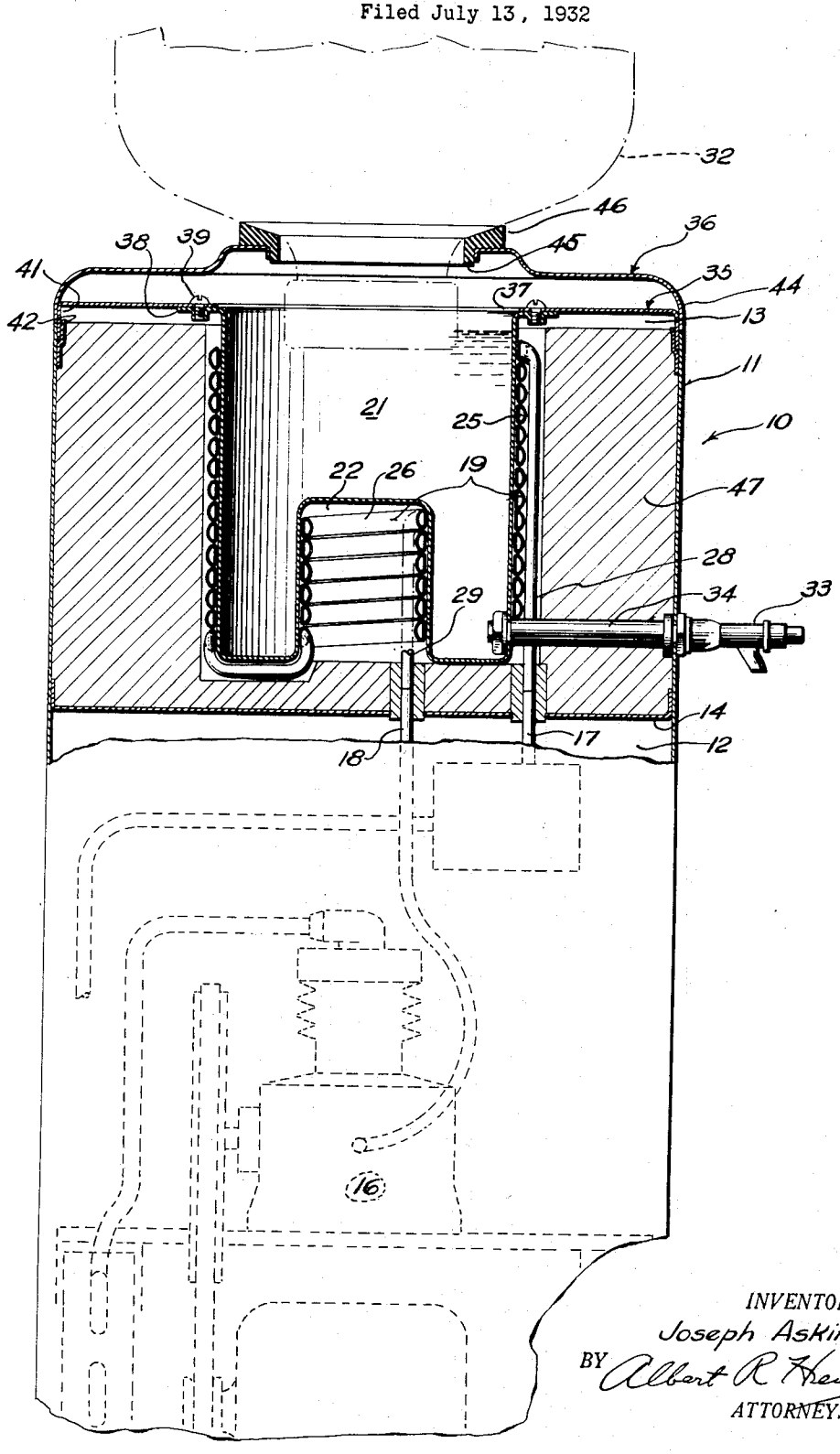
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LIQUID COOLING APPARATUS

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LIQUID COOLING APPARATUS

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3 Claims. (Cl. 62—141)

This invention relates to refrigerating apparatus for cooling liquids.

The invention will be found to reside in a cooperating fluid receptacle and evaporator coil structure wherein the receptacle is formed in a novel manner to obtain a large exterior surface, a major portion of which is covered by the coil in such manner as to provide not only an efficient heat transfer device, but a unit particularly adapted to economical mass production.

The device is well adapted to cool beverages such as orangeade and other pulp containing liquids. Such liquids are particularly difficult to maintain at low temperatures because of the solid matter included therein, and the embodiment of the invention herein shown and described includes a disclosure of such use, including a drawing showing a refrigerated dispenser unit wherein the receptacle compartment is shown in section.

The numeral 10 indicates a cabinet or housing having a sheet metal shell 11 enclosing a refrigerator unit compartment 12 and a receptacle-evaporator compartment 13, which are separated by a horizontal partition 14.

The compartment 12 provides a housing for a refrigerator device 16, which is herein shown as the usual motor-compressor-condenser unit, having a refrigerant delivery pipe 17 and a suction pipe 18, both of which extend upwardly through the partition 14 for connection with the opposite terminals of an evaporator coil 19 located in the overlying compartment 13.

The evaporator coil 19 is advantageously associated with a liquid containing receptacle 21 which is preferably cylindrical in shape and formed with a coaxial chamber 22 in its bottom wall. The coil is formed of a continuous length of half round tubing, and comprises an outer section or helix 25 coiled about the outer wall of the receptacle 21, and an inner section 26 which enters the chamber 22 of the receptacle. It will be noted that the flat side of the convolutions of both sections are in intimate contact with the walls of the receptacle, thus insuring an efficient heat exchange relationship between the liquid in the receptacle and the fluid within the coil.

The ends 28 and 29 of the coil 19 are connected to the delivery pipe 17 and suction pipe 18, respectively, of the refrigerator unit, whereby a circulation of refrigerant through the coil is obtained.

The fluid in the receptacle 21 is maintained at a high level by means of an inverted bottle 32, and a tap or faucet 33 mounted on the exterior of the cabinet is provided for withdrawing the cooled fluid. This tap is in communication with the lower level of the receptacle through a suitable pipe fitting 34.

The upper end of the shell 11, which is utilized as a mounting means for the supporting structure for the receptacle 21 and the bottle 32, includes a plate 35 and a bottle-supporting cap 36. The plate 35 is formed with a central opening 37 permitting access to the receptacle 21, a flange 38 of which is secured thereto by means of screws 39. The plate is formed with a depending peripheral flange 41 which enters the shell 11 and is supported on a plurality of clip members 42 secured to the inner walls of the shell.

The cap 36 covers the plate 35 and is provided with a depending peripheral flange 44, which frictionally engages over the flange 41 of the plate and abuts the top edge of the shell 11. This member is formed with a central throat portion 45 containing an annular rubber gasket 46, upon which the bottle 32 is adapted to be mounted in inverted position, as shown in dotted lines in the drawing. The cap, thus mounted, is easily removable, thereby permitting access to the receptacle for cleaning. It will also be noted that the cap is suitably proportioned to locate the outlet of the bottle 32 at a high level in the receptacle 21.

The space between the coil 19 and the walls of the compartment 12 is filled with a suitable insulating material 47, which may be a loose material, such as granular cork, or a solid material such as a monolithic cast, or the like.

It will be noted that by removing the fitting 34 from the receptacle 21, that the receptacle may be readily withdrawn from the cabinet for purposes of cleaning or repair, and that such withdrawal may be effected without disturbing the evaporator coils. It will also be observed that the receptacle and attached plate 35 are mounted as a unit in the cabinet, and that, in turn, they provide a mounting for the cover 36 and bottle 32.

The evaporator coil and receptacle structure, due to the novel coil arrangement resulting in the large cooling contact surface, is not necessarily limited in use to the associated structure herein described, as it will be apparent that the principles disclosed may be applied in numerous manners in this art.

I claim:

1. A fluid cooling unit comprising an open receptacle having an outer wall and a bottom, said bottom being formed with a deformed chamber

portion entering the receptacle, and an evaporator coil formed of a continuous length of tubing having one section coiled about said outer wall and a second section coiled within the chamber portion adjacent the outer wall thereof.

2. A fluid cooling unit comprising an open receptacle having an outer wall and a bottom, said bottom being formed with a deformed chamber portion entering the receptacle, and an evaporator coil formed of a continuous length of tubing, having one section coiled about said outer wall and a second section coiled within the chamber portion adjacent the outer wall thereof, said tubing having a flat face arranged in opposed relation to the contacting wall portions adjacent both sections.

3. A refrigerating unit comprising a cabinet having a wall structure, a receptacle within said cabinet, said receptacle being formed with a reentrant portion in the bottom thereof, refrigerant coils disposed around the outer portion of said receptacle and within the reentrant portion thereof, a plate extending from the upper edge of said receptacle adjacent the walls of said cabinet, clips on said walls for supporting said plate and receptacle independently of said coils, an apertured cover disposed over said plate and receptacle, said apertured cover being adapted to support an inverted bottle for discharge into said receptacle.

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