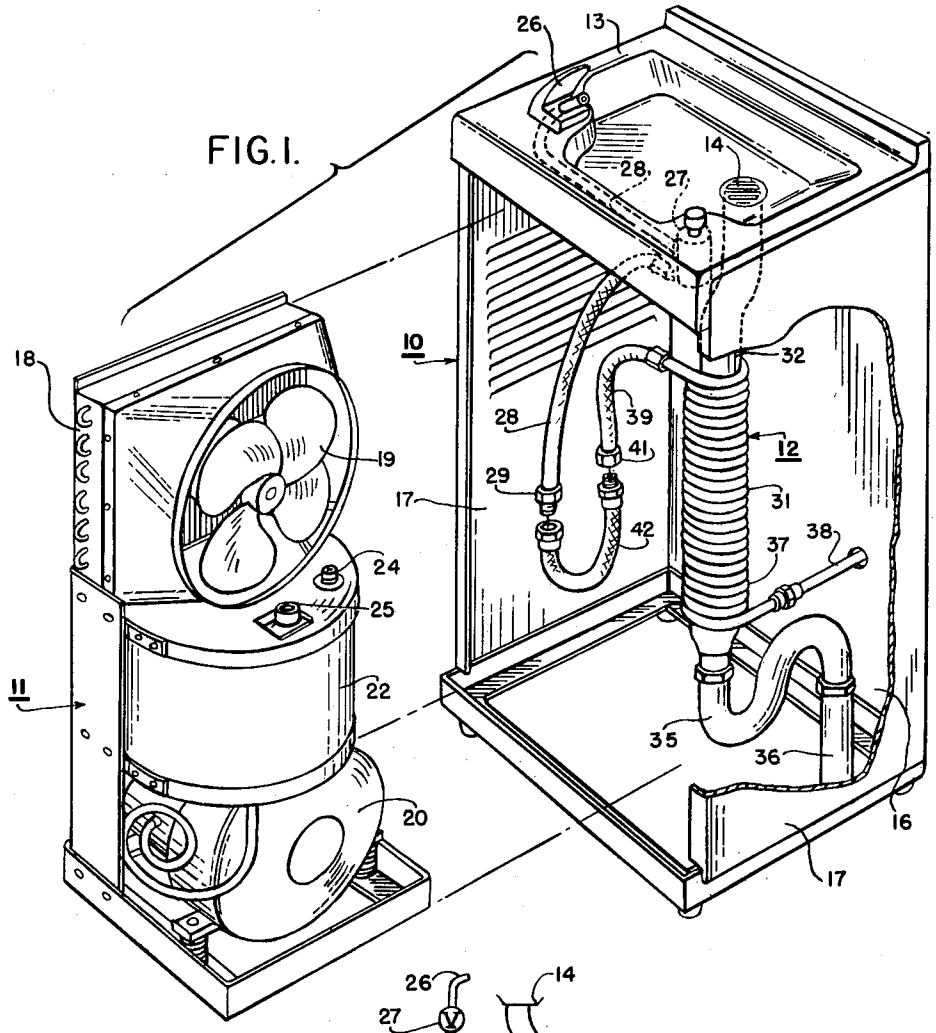
May 8, 1962 W. R. LYMAN 3,033,007

WATER COOLER APPARATUS

Original Filed June 12, 1958 2 Sheets-Sheet 1

FIG. 1.



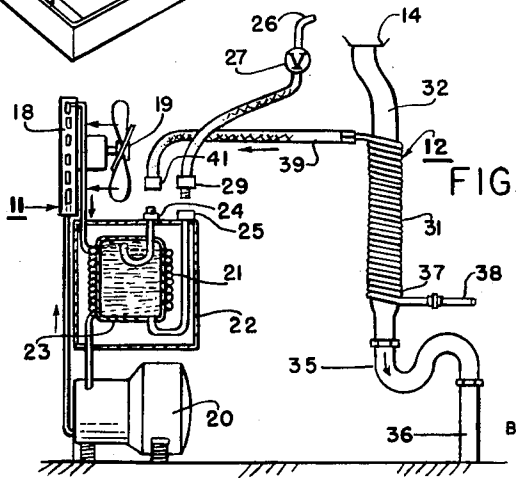


FIG. 2.

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WATER COOLER APPARATUS

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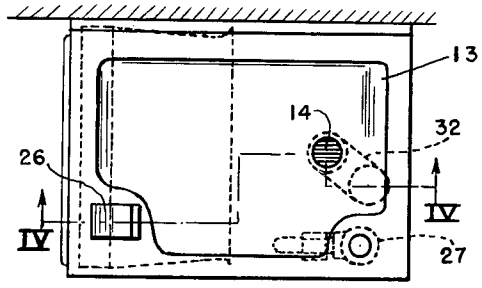


FIG.3.

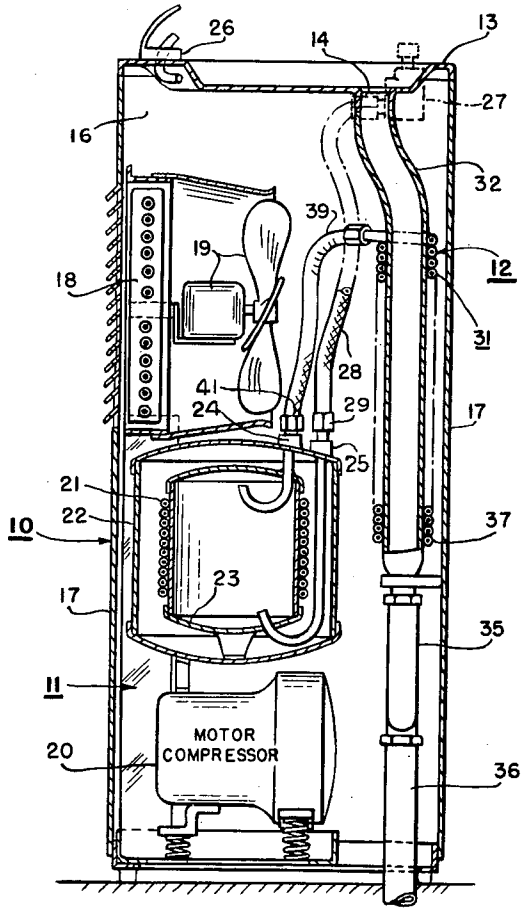


FIG.4.

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WATER COOLER APPARATUS

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Continuation of abandoned application Ser. No. 741,697, June 12, 1958. This application May 31, 1961, Ser. No. 120,113

6 Claims. (Cl. 62—298)

This application is a continuation of application Serial No. 741,697, filed June 12, 1958, now abandoned.

This invention relates to water coolers that are connected to the fresh water and drainage pipes of a building.

This invention particularly concerns an arrangement of the components of a water cooler which enables the refrigerating unit to be removed from the cooler without disturbing the plumbing connections between the cooler and the fresh water and drain pipes of the building in which the cooler in installed. Thus, the replacement and repair of refrigerating units is greatly facilitated.

In accordance with the invention, the elements of the water conducting system of the cooler, including particularly the precooler, bubbler, and drain assemblies, are affixed to and carried by the cabinet structure of the cooler and located so as to remain in place therein during removal of the refrigerating unit. Since the precooler and drain assemblies are the items in the cooler which are connected to the fresh water and drain pipes of the building, the plumbing connections to the building lines are unaffected by removal of the refrigerating unit. Readily separable connectors are included in the fresh water circuit of the cooler to permit the precooler and bubbler assemblies to be uncoupled from the water cooling tank, which is a part of the refrigerating unit and is removable therewith.

Also in accordance with this invention the plumbing connections between the cooler and the fresh water and drain pipes of the building are disposed entirely within the confines of the cooler cabinet. This results in marked improvement in the appearance of the cooler because such unsightly items as traps, unions, vent pipes, and the like, are hidden from view. Furthermore, this arrangement enables the cooler to be mounted flush against a building wall, or recessed therein, to conserve floor space and further enhance the appearance of the cooler. With prior art water coolers, such items as traps, unions and vents were positioned exteriorly of the cabinet at the rear thereof, making flush installation of the cabinet both difficult and expensive.

The removability of the refrigerating unit facilitates the work of making the plumbing connections within the cooler cabinet, since, with the unit completely removed from the cabinet, adequate and readily accessible working space is available.

The various objects, features and advantages of the invention will appear more fully from the detailed description which follows, taken in connection with the accompanying drawings, forming a part of this application, in which:

FIG. 1 is a front perspective view of the water cooler apparatus, constructed and arranged according to the invention, but showing the refrigeration unit removed from the cabinet and having wall portions of the cabinet broken away to illustrate the interior thereof;

FIG. 2 is a schematic illustration of the refrigeration and water conducting systems of the apparatus of FIG. 1;

FIG. 3 is a plan view of the apparatus of FIG. 1; and

FIG. 4 is a vertical sectional view taken along line IV—IV of FIG. 3.

The invention is applied to a water cooler of the type adapted for connection to a pressurized fresh water inlet pipe and a waste water drain pipe, and comprises a cabinet **10**, a removable refrigeration unit **11**, and a water conducting system **12**.

The cabinet **10** comprises a top wall or sink **13** having a drain opening **14** formed therein and upright walls including a rear wall **16**, a pair of side walls **17**, and a removable front wall (not shown). At least one of the upright walls has suitable openings formed therein to permit the circulation of air through the cabinet **10** for cooling the refrigeration unit **11**. The cabinet **10** provides an enclosure for the refrigeration unit **11** and the water conducting system **12**.

The refrigeration unit **11** is movable out of and into the cabinet **10** through the opening provided by removal of the cabinet front wall. The components of the refrigeration unit include an air cooled condenser preferably having a fan **19**. If desired, a water cooled condenser can be employed. The refrigeration unit **11** also includes a motor-compressor unit **20** which receives electrical current from a conventional service line (not shown) and cooperates with the condenser **18** and such other conventional components of a refrigeration circuit as an evaporator **21** and suitable refrigerant tubing. The evaporator **21** is arranged in heat transfer relationship with a water containing means for water to be cooled. In the illustrated embodiment, this water containing means is a water cooling tank **23** about which the evaporator **21** is coiled in heat transfer relationship therewith. The evaporator and the tank are encased within an insulating jacket **22**. (See FIG. 4). The tank **23** has an inlet **24** and an outlet **25** secured to the jacket **22** at the top surface thereof. All of the components of the refrigeration unit **11**, including the water cooling tank **23**, are carried by a suitable frame or support which enables the unit to be removed from the cabinet **10** and replaced therein as a package or unit. (See FIG. 1). The refrigeration unit **11** is disposed within the cabinet **10** in a region neighboring, that is, next to, the removable front wall, so that the unit **11** can be moved into and out of the access opening without interference with components of the water conducting system **12**.

The water conducting system **12** is carried by the cabinet **10** and includes a bubbler **26** mounted on the sink **13** and adapted to discharge a stream of cooled water. For controlling the flow of water to the bubbler **26** a suitable button-actuated valve **27** is provided. Cooled water is conveyed to the bubbler **26** by an insulated inlet hose **28** having a readily disconnectable union **29** at its inlet end for making a threaded, water-tight connection with the tank outlet **25**. Also included in the water conducting system **12** is a precooler **31** which serves to reduce the temperature of the incoming fresh water by causing it to give up heat to the waste water delivered to the precooler **31** from the sink drain opening **14**. The precooler **31** includes a waste water drain tube **32** having an upper inlet connected to the sink drain opening **14** and a lower outlet connected to a trap **35**, which is in turn connected to a waste water drain pipe **36**, forming a part of the plumbing of the building in which the cooler is installed. In addition, the precooler **31** includes a fresh water conduit **37** having portions thereof wound in serpentine fashion about the tube **32**, in heat transfer relation therewith. The inlet end of the conduit **37** is connected to a fresh water pipe **38**, and the outlet thereof is connected to one end of a flexible hose **39** which forms an extension for the conduit **37**. The other end of the hose **39** is equipped with a readily disconnectible union **41** for making a threaded water-tight connection with the tank inlet **24**. The refrigeration unit **11** can be readily removed from the cabinet **10** after removal of the front wall and disconnection of the unions **29** and **41**. This feature of removability of the refrigeration unit **11** greatly

facilitates installation of the water cooler and enables all plumbing connections to be made within the confines of the cooler cabinet 10, thereby permitting such unsightly items as the drain trap 35 to be hidden from view.

The installation procedure of this improved water cooler is as follows: At the installation site, the workman removes the front panel of the cooler cabinet 10, disconnects unions 29 and 41, and removes the refrigeration unit 11 from the cabinet. The cabinet, with the components of the water conducting system 12 affixed thereto, is placed over the waste water pipe 36 of the building, and the fresh water pipe 38 is led into the cabinet. The cabinet, it will be noted, is adapted to permit these extensions of the building plumbing system to extend therein and terminate interiorly of the cabinet; there being an opening in the bottom of the cabinet through which the drain pipe 36 extends and an opening in the rear wall of the cabinet through which the fresh water pipe 38 extends. By virtue of removal of the refrigeration unit 11, sufficient working space is now available within the cabinet 10 to enable the workman to make the necessary plumbing connections to the cooler drain tube 32 and the cooler fresh water conduit 37. The refrigeration unit 11 is thereafter returned to the cabinet 10, union 41 is connected to the cooling tank inlet 24, union 29 is connected to the cooling tank outlet 25, and the front wall of the cabinet 10 is remounted.

It will be noted that the components of the water conducting system 12, particularly the precooler 31, are disposed to one side of the interior of the cabinet 10, so as to not interfere with removal of the refrigeration unit 11, thereby enabling the refrigeration unit 11 to be removed without disturbing the water conducting system.

It will be noted that removal of the refrigeration unit 11 does not require the services of a plumber because the connections to the fresh water pipe 38, the trap 35 and the waste water pipe 36 are not disturbed. In the event that a replacement refrigeration unit is not readily available for a unit 11 which must be removed from the premises for service, the apparatus can be rendered capable of dispensing fresh, unrefrigerated water by simply connecting the unions 29 and 41 together. For this purpose, the unions 41 and 25 are preferably female members and the unions 29 and 24 are preferably male members to facilitate the connection of unions 29 and 41. If desired, a separate jumper conduit 42 can be employed to connect unions 29 and 41 for reestablishing the water conducting system when the refrigeration unit is removed. (See FIG. 1.)

From the foregoing it will be apparent that an arrangement for a water cooler has been invented which will present a pleasing appearance because the waste water drain pipe 36 and the fresh water pipe 38, forming a part of the building's plumbing system, can be brought into the rear or bottom of the cabinet 10 and connected, together with traps, filters, and the like, to the precooler 31. Not only does this arrangement lend itself well to "built-in" installations, but is espcially well suited for flush mounted installations because the traps, unions and the like, previously located rearwardly of the cooler cabinet, are located interiorly of the cabinet. Additionally, the arrangement and location of the water conducting system 12 and associated plumbing is such that they do not present an obstruction in the path of movement of the refrigeration unit 11 into and out of the cabinet 10, and also permits the refrigeration unit to be readily removed and serviced after disconnection of the unions 29 and 41 by a refrigeration repairman, thus eliminating the need for the services of a plumber, and thereby providing the user with an easily and economically maintained water cooler.

While the invention has been shown in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. A water cooler adapted for connection to a fresh water pipe and a waste water drain pipe and comprising an enclosure forming cabinet having a sink formed therein and a plurality of upright walls, at least one of said walls being removable to provide an access opening to the interior of the cabinet, said cabinet being adapted to permit said fresh water pipe and said drain pipe to extend therein and terminate interiorly of the cabinet; a refrigeration unit including a water containing means for water to be cooled which containing means has an inlet and an outlet, said unit being disposed within said cabinet and being movable into and out of said cabinet through said access opening; and a water conducting system carried by said cabinet independently of said refrigeration unit and comprising cooled water conveying means having an inlet disposed interiorly of said cabinet and an outlet disposed exteriorly of said cabinet adjacent said sink, waste water tubular means disposed within said cabinet for connecting said sink to said drain pipe, a fresh water conduit disposed within said cabinet for connecting said fresh water pipe to said water containing means, and readily disconnectable means connecting the inlet of said cooled water conveying means to the outlet of said water containing means and said fresh water conduit to the inlet of said water containing means; said readily disconnectable means, when disconnected, permitting said refrigeration unit to be removed from said cabinet without removal of said water conducting system.

2. A water cooler adapted for connection to a fresh water pipe and a waste water drain pipe and comprising an enclosure forming cabinet having a sink formed therein and a plurality of upright walls, at least one of said walls being removable to provide an access opening to the interior of the cabinet, said cabinet being adapted to permit said fresh water pipe and said drain pipe to extend therein and terminate interiorly of the cabinet; a refrigeration unit including a water containing means for water to be cooled which containing means has an inlet and an outlet, said unit being disposed within said cabinet in a region neighboring said one wall, and being movable into and out of said cabinet through said access opening; and a water conducting system carried by said cabinet independently of said refrigeration unit and comprising a bubbler located adjacent said sink, a precooler disposed within said cabinet and comprising a waste water tube for connecting said sink to said drain pipe and a fresh water conduit for connecting said fresh water pipe to said water containing means, said fresh water conduit having a portion thereof in heat transfer relationship with said waste water tube, and readily disconnectable means connecting said bubbler to the outlet and said fresh water conduit to the inlet of said water containing means; said readily disconnectable means, when disconnected, permitting said refrigeration unit to be removed from said cabinet without removal of said water conducting system.

3. A water cooler adapted for connection to a pressurized fresh water pipe and a waste water drain pipe, said water cooler comprising: a refrigeration unit including a water containing means for water to be cooled which containing means has an inlet and an outlet, a water conducting system having portions thereof connectable to said pipes, and a cabinet forming an enclosure for said unit and at least those portions of said system which are connectable to said pipes; said cabinet comprising a top wall defining a sink having an outlet formed therein, and a plurality of upright walls one of which is removable from said cabinet to provide an access opening to the interior of the cabinet, said cabinet being adapted to permit said fresh water pipe and said drain pipe to extend therein and terminate interiorly of the cabinet; said refrigeration unit being disposed in a region within said enclosure neghboring said one wall and being movable

out of and into said cabinet through said access opening; said water conducting system being carried by said cabinet independently of said refrigeration unit and comprising a bubbler located adjacent said sink, a precooler including a waste water tube and a fresh water conduit, said tube and said conduit having portions thereof in heat transfer relationship, said conduit having an inlet connectable interiorly of the cabinet to said fresh water pipe, said waste water tube having an inlet connected to the sink outlet and an outlet connectable interiorly of the cabinet to said drain pipe, first readily disconnectable means connecting said bubbler and the outlet of said water containing means, and second readily disconnectable means connecting the inlet of said water containing means and the outlet of said fresh water conduit; the construction and arrangement being such that said refrigeration unit can be moved into and out of said cabinet through said access opening without interference with said water conducting system when said one wall is removed from said cabinet and said readily disconnectable means are disconnected.

4. A water cooler adapted for connection to a pressurized fresh water pipe and a waste water drain pipe and comprising: a refrigeration unit including a water containing means for water to be cooled which containing means has an inlet and an outlet, a water conducting system having portions thereof connectable to said pipes, and a cabinet forming an enclosure for said unit and at least those portions of said system which are connectable to said pipes; said cabinet comprising a top wall defining a sink having an outlet formed therein, and a plurality of upright walls one of which is removable from said cabinet to provide an access opening to the interior of the cabinet, said cabinet being adapted to permit said fresh water pipe and said drain pipe to extend therein and terminate interiorly of the cabinet; said refrigeration unit being disposed in a region within said enclosure neighboring said one wall and being movable out of and into said cabinet through said access opening; said water conducting system being carried by said cabinet independently of said refrigeration unit and comprising a bubbler located adjacent said sink, a precooler including a waste water tube and a fresh water conduit having portions thereof in heat transfer relationship, said conduit having an inlet connectable interiorly of the cabinet to said fresh water pipe, said waste water tube having an inlet connected to the sink outlet and an outlet connectable interiorly of the cabinet to said drain pipe, first readily disconnectable means connecting said bubbler and the outlet of said water containing means, second readily disconnectable means connecting the inlet of said water containing means and the outlet of said fresh water conduit, and means for connecting said first and second readily disconnectable means to each other when they are disconnected from said water containing means, whereby said bubbler can dispense fresh, uncooled water when said refrigeration unit is removed from said cabinet.

5. A water cooler adapted for connection to a pressurized fresh water pipe and a waste water drain pipe, said water cooler comprising a cabinet comprising a top wall defining a sink having an outlet and a plurality of upright walls, at least one of said walls being removable from said cabinet to provide an access opening to the interior thereof, said cabinet being adapted to permit said fresh water pipe and said waste water pipe to extend into said cabinet; a refrigeration unit including a water containing means for water to be cooled which containing means has an inlet and an outlet, said refrigeration unit being disposed within said cabinet next to said removable wall and being movable out of and into said cabinet through said access opening; and a water conducting system carried by said cabinet independently of said refrigeration unit, said water conducting system comprising a bubbler located adjacent said sink, a precooler including a waste water tube and a fresh water conduit, said tube and said conduit having portions thereof in heat transfer relationship and each having an inlet and an outlet, the inlet of the fresh water conduit and the outlet of the waste water tube being connectable, respectively, to said fresh water pipe and said waste water pipe, said inlet of the waste water tube being connected to the sink outlet, first readily disconnectable means for connecting said bubbler and the outlet of said water containing means, and second readily disconnectable means for connecting the inlet of said water containing means and said fresh water conduit outlet of said precooler; the construction and arrangement being such that said refrigeration unit can be moved into and outlet of said cabinet opening without interference with said water conducting system when said one wall is removed from said cabinet and said readily disconnectable means are disconnected.

6. A water cooler adapted for connection to a pressurized fresh water pipe and a waste water drain pipe, said water cooler comprising a cabinet comprising a top wall defining a sink having an outlet formed therein, a plurality of upright walls, at least one of said walls being removable from said cabinet to provide an access opening to the interior thereof, said cabinet being adapted to permit said fresh water pipe and said drain pipe to extend into said cabinet and terminate interiorly thereof; a refrigeration unit including a water containing means for water to be cooled which containing means has an inlet and an outlet, said refrigeration unit being disposed within said cabinet in a region neighboring said one wall and being movable out of and into said cabinet through said access opening; a water conducting system carried by said cabinet independently of said refrigeration unit and comprising a bubbler located adjacent said sink, a precooler including a waste water tube and a fresh water conduit, said tube and said conduit having portions thereof in heat transfer relationship, said conduit having an inlet connectable interiorly of the cabinet to said fresh water pipe, said waste water tube having an inlet connected to the sink outlet and an outlet connectable interiorly of the cabinet to said drain pipe, first readily disconnectable means for connecting said bubbler and the outlet of said water containing means, second readily disconnectable means for connecting the inlet of said water containing means and the outlet of said fresh water conduit, and means for connecting said first and second readily disconnectable means to each other when they are disconnected from said water containing means, whereby said bubbler can dispense fresh uncooled water when said refrigeration unit is disconnected from said water conducting system.

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