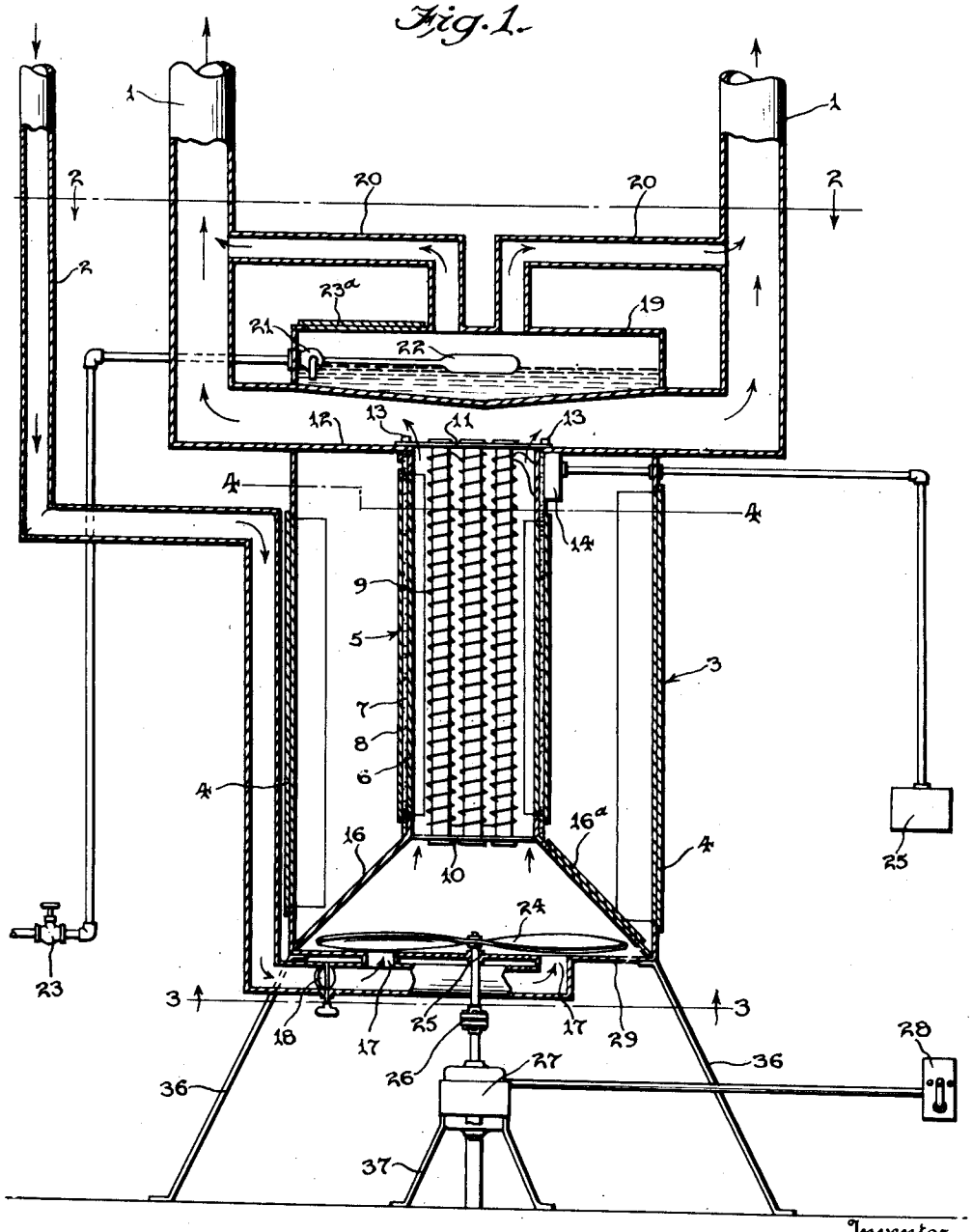
Nov. 27, 1934. H. CARMICHAEL 1,982,418

ELECTRIC FURNACE

Filed March 19, 1931 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

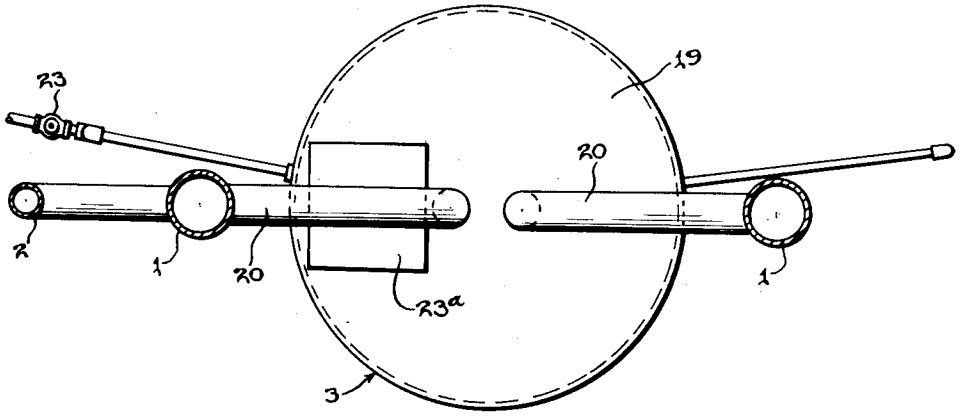


Fig. 3.

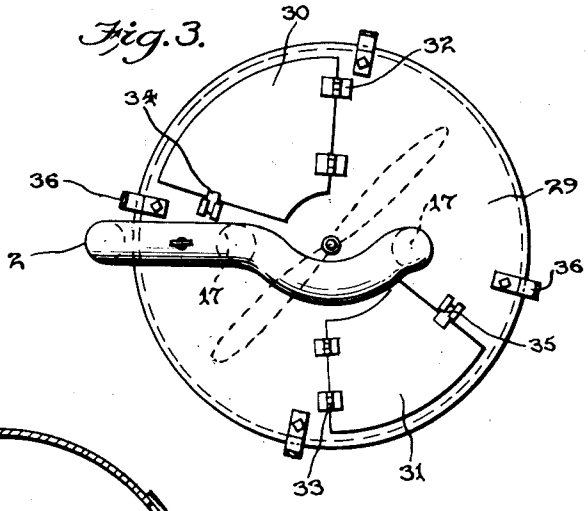
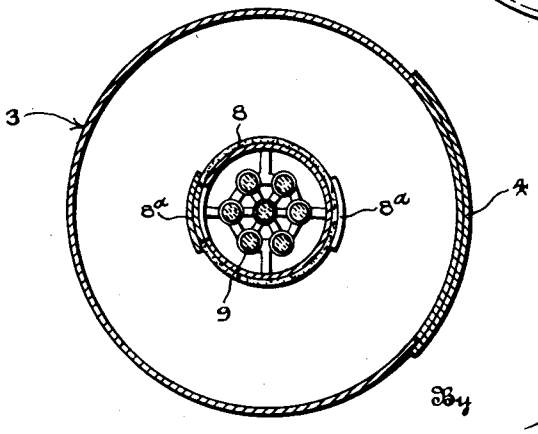


Fig. 4.



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UNITED STATES PATENT OFFICE

1,982,418

ELECTRIC FURNACE

Howard Carmichael, Lexington, Ky.

Application March 19, 1931, Serial No. 523,884

2 Claims. (Cl. 219—39)

My invention relates to temperature controlling means for dwellings, buildings, and the like, more particularly to a heating means consisting of a furnace and a cooling means associated with said furnace.

A primary purpose of my invention is to provide an electric furnace in which the electric unit may be readily removed for repair or replacement with a minimum amount of effort on the part of the user.

Another object of my invention is to provide a furnace of the type described which will provide a circulation of warm air having just the proper degree of moisture content to render the same most effective for promoting the comfort of occupants of the dwelling in which the furnace is used.

A further object of my invention is to provide a furnace of the type described having associated therewith means for circulating a cool stream of air throughout the dwelling or building in which the device is set up for lowering the temperature of the dwelling or building during warm weather or periods of high temperature.

A still further object of my invention is to provide a device of the type described the parts of which are easily set up and associated with one another or removed from said association at the will of an operator.

A yet further object of my invention is to provide a device of the type described which has few parts, does not get out of order easily, and is simple to manufacture.

Other objects and advantages will appear as the specification proceeds, and the device will be more particularly defined in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of this application, in which

Figure 1 is a sectional view of my invention with parts thereof shown in elevation for clearness of the illustration,

Figure 2 is a sectional view on line 2—2 of Figure 1,

Figure 3 is a sectional view on line 3—3 of Figure 1, and

Figure 4 is a sectional view on line 4—4 of Figure 1.

In carrying out my invention I make use of the ordinary air circulatory means of the heating system of any dwelling, building, or other structure occupied by people, to which the air circulatory means of my apparatus is connected. The pipes for conducting air to the circulatory system of the building or other structure are shown at 1, while the pipes for returning air from said system to my device for re-circulation is indicated by the numeral 2. The pipes, 1, are mounted on top of and connected to, for communication with certain portions thereof, the body 3 of my furnace.

This body, 3, comprises a cylindrically formed member which may be made of sheet iron or any other suitable material, and which is equipped with a pair of similarly formed and oppositely disposed doors, 4, for purposes that will soon be made clear. Within this cylindrical member, 3, and preferably axially disposed relative thereto is a second cylindrical member, 5, the inner wall, 6, of which consists of polished copper or other suitable heat radiating material, backed up by a second wall, 7, of asbestos or other suitable heat insulating material, held in position by a third wall, 8, of sheet metal or other material having similar properties. Gates, 8a, are also provided in these walls for means that will presently appear. It is within the chamber formed by these walls that I house my electrical heating unit.

This unit comprises a plurality of resistance coils, 9, in this case seven, symmetrically placed with relation to one another and secured in fixed relative relationship by means of perforated end plates, 10 and 11. The lowermost, 10, of these end plates simply fits snugly within the cylindrical wall, 6, while the uppermost, 11, of these end plates extends annularly beyond the cylinder, 5, to suspend the unit within the chamber from the wall, 12, on which the same is mounted. This end plate, 11, is secured to the wall, 12, by means of bolts or other suitable fasteners, indicated at 13, in a manner easily understood. The coils are connected in series, as shown, and the entire system or unit is connected to the fuse box, 14, which is further connected to a suitable source of electrical energy supply, such as the main line supplying the house with current. A suitable switch, 15, is interposed in the line to throw the heating unit on and off as desired. This switch may be associated with a rheostat means for controlling the heat supplied by said unit in a manner easily understood. If desired a thermostatic control means may be substituted in place of a switch, which method of control is well known in the art. The switch, 15, or the thermostat, if such is used, may be positioned at any point or place desired about the house or building.

For conducting the air from the circulatory return pipe, 2, into the chamber formed by the member 5, an inverted funnel, 16, in the form of a truncated cone is provided therebelow, the

mouth of which funnel communicates with said pipe, 2, by means of inlets, 17, the entry of air into which is controlled by means of the gate valve, 18, as desired by an operator. This funnel, 16, is provided with a door, 16*a*, for permitting access to the fan when desired.

For moistening the air in circulation a tank, 19, is provided, positioned preferably above the furnace body, 3, and having pipes, 20, for communication with the pipes, 1. This tank, 19, is adapted to contain water at a predetermined level therein, the level of this water being maintained at said predetermined level by means of a valve, 21, communicating with the tank and a float, 22, communicating with the water therein for controlling said valve. This float and valve may be of any suitable construction for performing this function. A manual cut-off valve, 23, in the liquid supply pipe to the tank allows the liquid supply to be shut off when it is wished not to use the same. This tank, 19, is provided with a door, 23*a*, for permitting access thereto when necessary.

For increasing the circulation of the air about the heating coils and throughout the system, if it is desired to augment the natural circulation thereof due to the heat supplied by the coils, and for cooling the dwelling or building, as will be set forth later on in this specification, I provide a fan, 24, mounted in the oil bearing, 25, and connected by means of coupling, 26, to a motor, 27, for operation thereof, this motor being controlled for operation by means of a switch, 28, which may be associated with suitable rheostat means for increasing and decreasing the speed of rotation of the motor.

For use when the apparatus is used as a cooling system, the base portion, 29, of the cylindrical body, 3, is provided with a pair of doors, 30 and 31, hinged to said base as indicated at 32 and 33, and opening downwardly when latches, 34 and 35, release the same.

The body portion, 3, of the furnace is supported in an elevated position by means of legs, 36, which allow a free circulation of air therebeneath. The motor, 27, is supported in a similar manner by legs, 37, which allow the ready removal or positioning of said motor when uncoupled or coupled to the fan spindle.

From the foregoing description the use and operation of my device is easily understood. When it is desired to use the furnace as a heating system, the parts are set up as heretofore described and the switch, 15, operated to energize the resistance coils, comprising the electrical unit. The air being heated within the chamber formed by the cylindrical member, 5, will rise through pipes, 1, drawing off by means of evaporation through pipes, 20, water vapor from the tank, 19, for circulation in the circulatory pipes of the dwelling or building connected to pipes, 1. This rising of the air through the chamber formed by member, 5, will cause an entry of air through the inlets, 17, from pipe, 2, to which the return pipes of the circulatory system are connected. This air will pass upwardly through the chamber to be heated and circulated in a manner easily understood. The supply of water in tank, 19, during this operation will be taken care of by the float control valve, 21, the valve, 23, being thrown to the open position when it is desired to moisten the air.

If it is desired to augment the rate of circulation, the fan, 24, is simply set in motion by means of operation of the switch, 28, to increase the speed of circulation.

If it is desired to use the apparatus as a cooling apparatus in summer, the operator simply leaves the switch, 15, in the off position, opens the doors, 20 and 31, and starts up the fan, 24. As the air in the cellar wherein the furnace is usually positioned is cool, a circulation of said cool air will be sent through the house or building to cool the same.

The doors, 4 and 8*a*, will permit ready access to the coils, the fuse box, and the funnel in which the fan is positioned for permitting assembly and disassembly of the parts, as well as repair and replacement of the same.

It is thus seen that I have provided a temperature controlling unit for use in dwellings, buildings, and the like, which will circulate warm, moist air through said dwelling or building or cool air therethrough when desired.

It is further seen that I have provided a device of the type described which may be easily repaired and assembled and disassembled.

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

1. A device for heating buildings and the like, comprising a heating unit, flue means connected to said heating unit for circulating the air throughout the rooms of said building, and means for increasing the moisture content of the heated air, consisting of a closed receptacle for containing water positioned above said heating unit, and flue means interconnecting said receptacle and said air circulating flue means, said receptacle having a water inlet valve and float means for automatically controlling the inflow of the water.

2. A device for heating buildings and the like, comprising a heating chamber, a heating unit positioned in said heating chamber, flue means for conducting the heated air from said heating chamber to the rooms of the building, flue means for returning the air from the rooms of said building to said heating chamber, a fan positioned in communication with said air return flue means, and a funnel for directing the stream of air from said fan into the heating chamber and thru said heating unit.

HOWARD CARMICHAEL.