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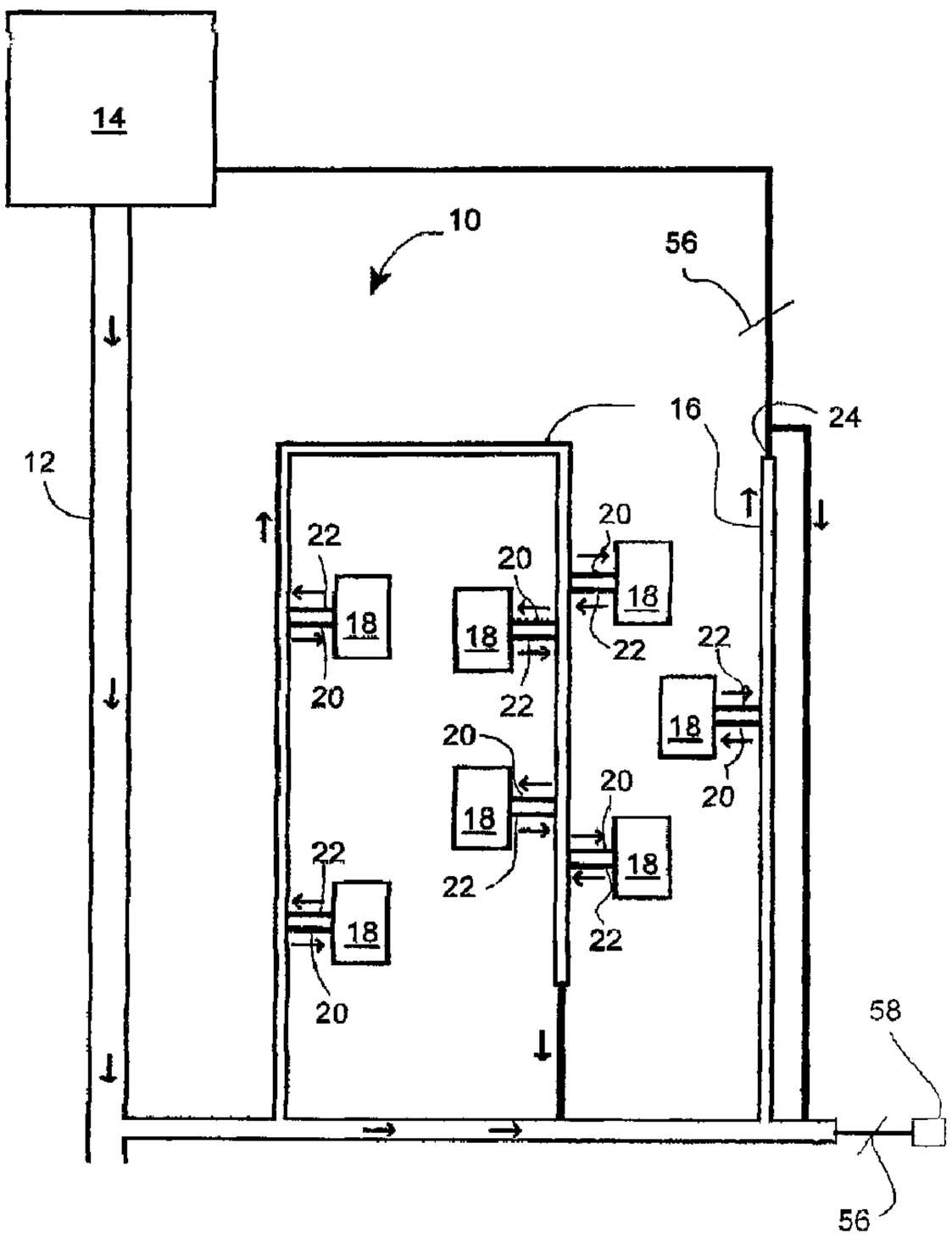
(54) Titre : RESEAU D'AQUEDUCS GEOTHERMIQUE
(54) Title: GEOTHERMAL AQUEDUCT NETWORK



(57) Abrégé/Abstract:
A geothermal aqueduct network has a heat pump inside each individual dwellings plus a circulation pump to provide circulation between the house and the aqueduct by way of an exit pipe (besides the existing water entry pipe) that returns the water to the

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(57) Abrégé(suite)/Abstract(continued):
aqueduct network. Having constant water circulation further insures against potential freezing up of the water in the aqueduct. This constant circulation can be achieved in various ways such as use of water by residents using water, by internal leakage that, in practice, is always present in aqueduct system or, by an overpressure release valve which empties water into the storm sewer system or back into the water reserve cistern of the aqueduct system.

ABSTRACT

A geothermal aqueduct network has a heat pump inside each individual dwellings plus a circulation pump to provide circulation between the house and the aqueduct by way of an exit pipe (besides the existing water entry pipe) that returns the water to the aqueduct network. Having constant water circulation further insures against potential freezing up of the water in the aqueduct. This constant circulation can be achieved in various ways such as use of water by residents using water, by internal leakage that, in practice, is always present in aqueduct system or, by an overpressure release valve which empties water into the storm sewer system or back into the water reserve cistern of the aqueduct system.

Geothermal aqueduct network

BACKGROUND OF THE INVENTION :

Field of the invention :

The invention relates generally to heating and air conditioning but more particularly to a geothermal system using the water from the aqueduct system.

Background of the invention :

The use of geothermal energy has been known for centuries and in recent decades, coupled with the heat pump technology, it has been found that it is possible, by running lengths of pipes underground, to capture the constant year-round heat of the ground, pass it through a heat pump and heat or cool a house, depending upon the seasonal requirements.

Patents 5,727,621 and 6,053,239, both by Hardin go to great length at explaining that since all the technology had been around and that the need to conserve energy is there, why is it that no one has thought about doing it sooner, therefore it must not have been so obvious to even those well versed in the art to do what Hardin teaches.

Not being obvious means that there is an inventive step. Indeed, Hardin was not only

succesful in obtaining a patent but two patents. Patent 6,053,239 is mostly concerned with the use of filtering means to filter water before putting it back into the system.

Since Hardin has created a precedent in this field of endeavor of combining known technology in order to make it do something it is designed to do but that no one has thought about using it to do what it can do and that, further, Hardin has shown that in this field, making a small change, such as the small difference between the teachings of patent 5,727,621 and the teachings of patent 6,053,239 can result in a patent even if the change concerns a step that should normally have been well known in the art. This instant invention does provide an approach that uses different steps, some of which solve certain issues raised by the patents of Hardin.

SUMMARY OF THE INVENTION

It is therefore a main advantage of this invention to solve problems of the prior art.

It is a second advantage of this invention to provide for a geothermal system that uses an existing aqueduct system as a source of water with a constant temperature year round for use in heat pumps so as to provide for a home heating and cooling system.

It is a third advantage of this invention to provide a means for keeping water in circulation constantly so as to maximize its efficiency as cooling or heating means.

It is a fourth advantage of this invention to provide for an efficient means of keeping the water source clean.

It is a fifth object of this invention to provide for a geothermal aqueduct network that does not require a secondary return line for water and in fact very little modification to an existing aqueduct system.

In order to do so, the invention comprises heat pumps inside each individual dwellings plus a circulation pump to provide circulation between the house and the aqueduct by way of an exit pipe (besides the existing water entry pipe) that returns the water to the aqueduct network. Having constant water circulation further insures against potential freezing up of the water in the aqueduct. This constant circulation can be achieved in various ways such as use of water by residents using water, by internal leakage that, in practice, is always present in aqueduct system or, by an overpressure release valve which empies water into the storm sewer system or back into the water reserve cistern of the aqueduct system. Also, and most importantly, in order to keep the water supply clean, the water is never used directly into the heat pump but is rather used in a much simpler heat excanger which does not contribute any pollutant to the water, at least far less than the aqueduct system contributes by itself.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better

appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which this disclosure is based, may readily be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

These together with other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENT

Fig. 1 Schematic view of the geothermal aqueduct network.

Fig. 2 Schematic view of a typical individual housing installation.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A geothermal aqueduct network (10) uses an existing aqueduct network as its basic structure which generally include at least one underground main pipe (12) starting from a regional water source (14) such as a cistern or pumping house pumping water from a remote location. The water source can be from the underground water table or from a river or other naturally occuring water source. The main pipe leads to secondary pipes (16) which eventually bring water to dwellings (18). Each house (18) has an inlet pipe (20) as is well known in the art but also has an outlet pipe (22) leading back to the secondary pipe (16). Once the water reaches a house (18) by way of the inlet pipe (20), the water goes through a heat exchanger (50), with the help of an optional circulating pump (51) if necessary, which transfers the water heat energy to a fluid (52) by means well known in the art of heat exchangers. For example, a heat exchanger (50) such as the fusion plate heat exchanger from Alfa Nova is certified for use in the food industry and as such, cannot contribute any pollutant to the water circulating through it.

Once water has passed through the heat exchanger (50) it is returned to the aqueduct system (10) by way of the outlet pipe (22). There is no need for a secondary pipe

system as is the case in the Hardin patents. There is thus no need to change the aqueduct system by doubling the amount of pipes, only the short length of pipes between a dwelling (18) and the secondary pipe (16) is required. In the heat exchanger (50) the water has exchanged its heat with the fluid (52). This fluid (52) is what circulates through the heat pump (54) and is processed as is well known in the art. Generally, at this point in time, a solution of water and metahne is considered an efficient fluid (52) for use in a heat pump (54) but of course, various other types of fluids (52) can be used as new developments warrant.

Because only when water is removed from the aqueduct system (10) does it move through it --water removal being generally defined as water being used such as by opening a tap, valve or spigot anywhere in the aqueduct system, (10) – there must be regular removal of water through a water removal means to provide circulation of water within the aqueduct system (10) if not, water could remain for long periods of time within the heat exchanger (50) and not be able to continue providing heat exchange.

Water removal can be done by using an overpressure valve (56) which can empty into a storm sewer (58) or back into the regional water source (14).

As to a further discussion of the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

CLAIMS:

1. A geothermal aqueduct network using an existing aqueduct network as its basic structure which generally include at least one underground main pipe starting from a regional water source such as a cistern or pumping house pumping water from a remote location and said water source can be from an underground water table or from a river or other naturally occuring water source;

said main pipe leading to secondary pipes bringing water to dwellings; and each said dwelling having an inlet pipe and further comprising:

an outlet pipe leading back to the secondary pipe;

water having reached a dwelling going through a heat exchanger which transfers heat energy to a fluid;

water having passed through said heat exchanger returning to said aqueduct system by way of said outlet pipe;

within said heat exchanger, water exchanging heat with said fluid;

a water removal means to provide circulation of water within said aqueduct system;

said water removal means being an overpressure valve which removes water from said aqueduct network.

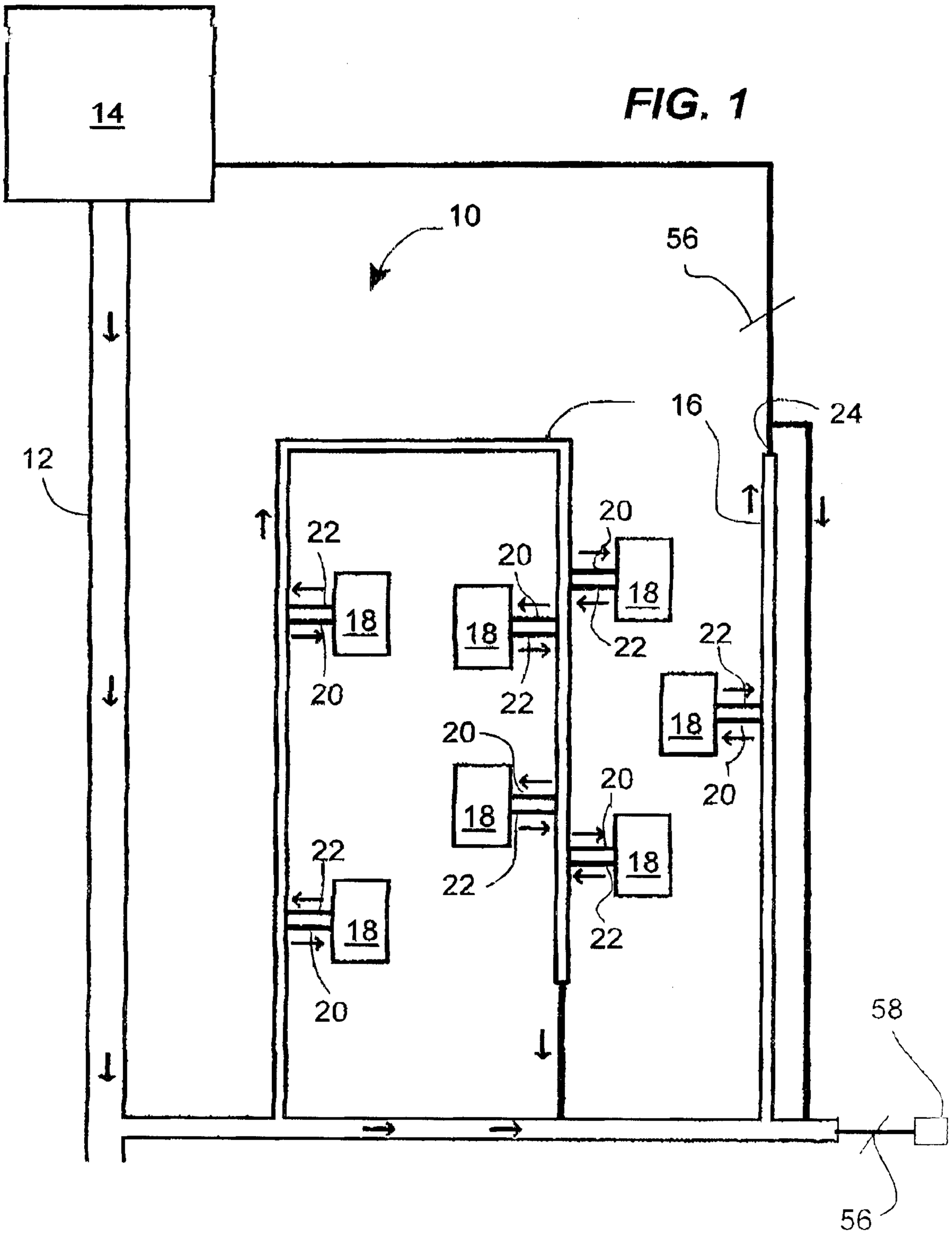
2. A geothermal aqueduct network as in claim 1 wherein:

said water removal means being by emptying water into a storm sewer.

3. A geothermal aqueduct network as in claim 1 wherein:

said water removal means being by returning water back into said regional water source.

FIG. 1



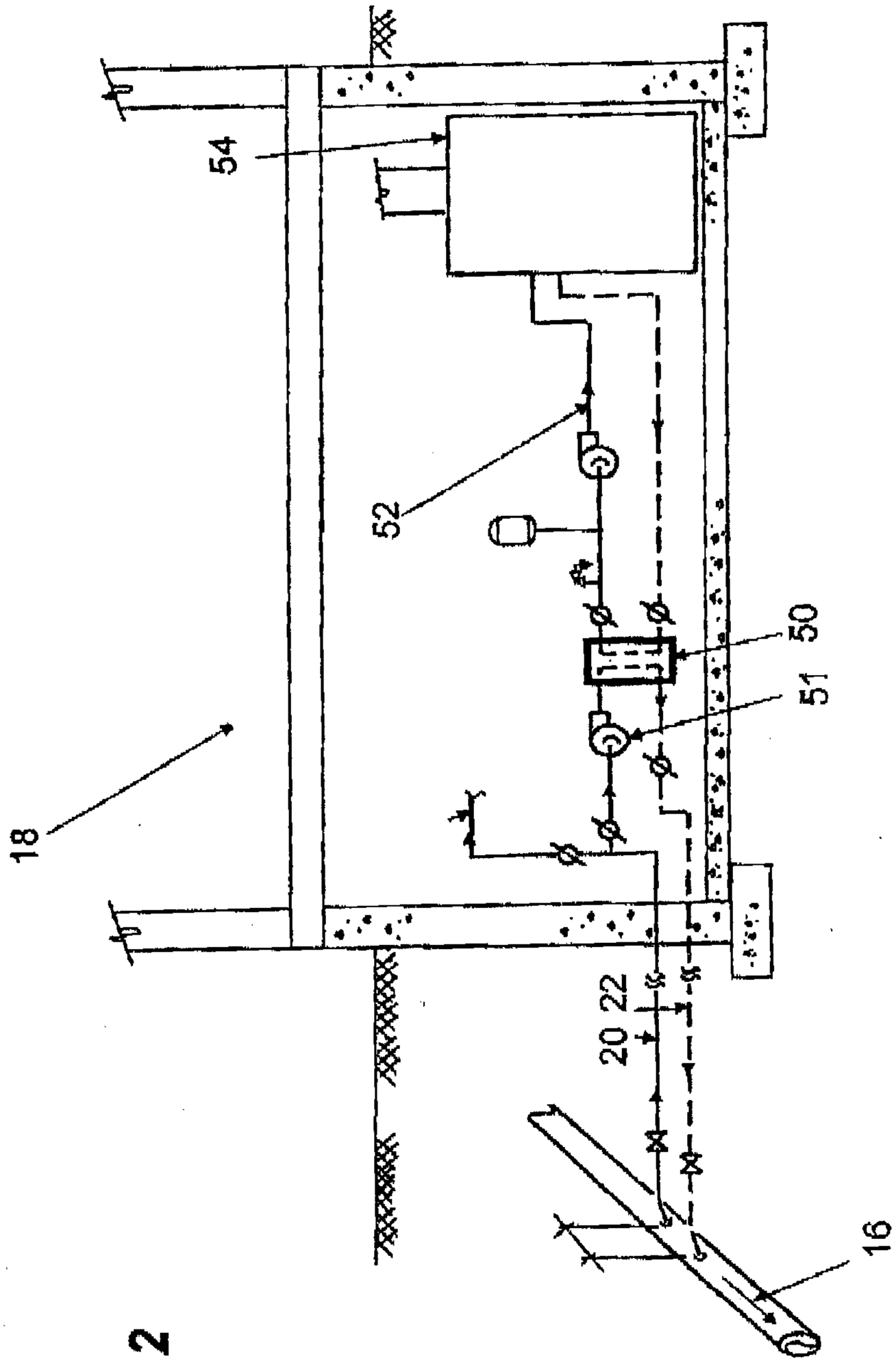
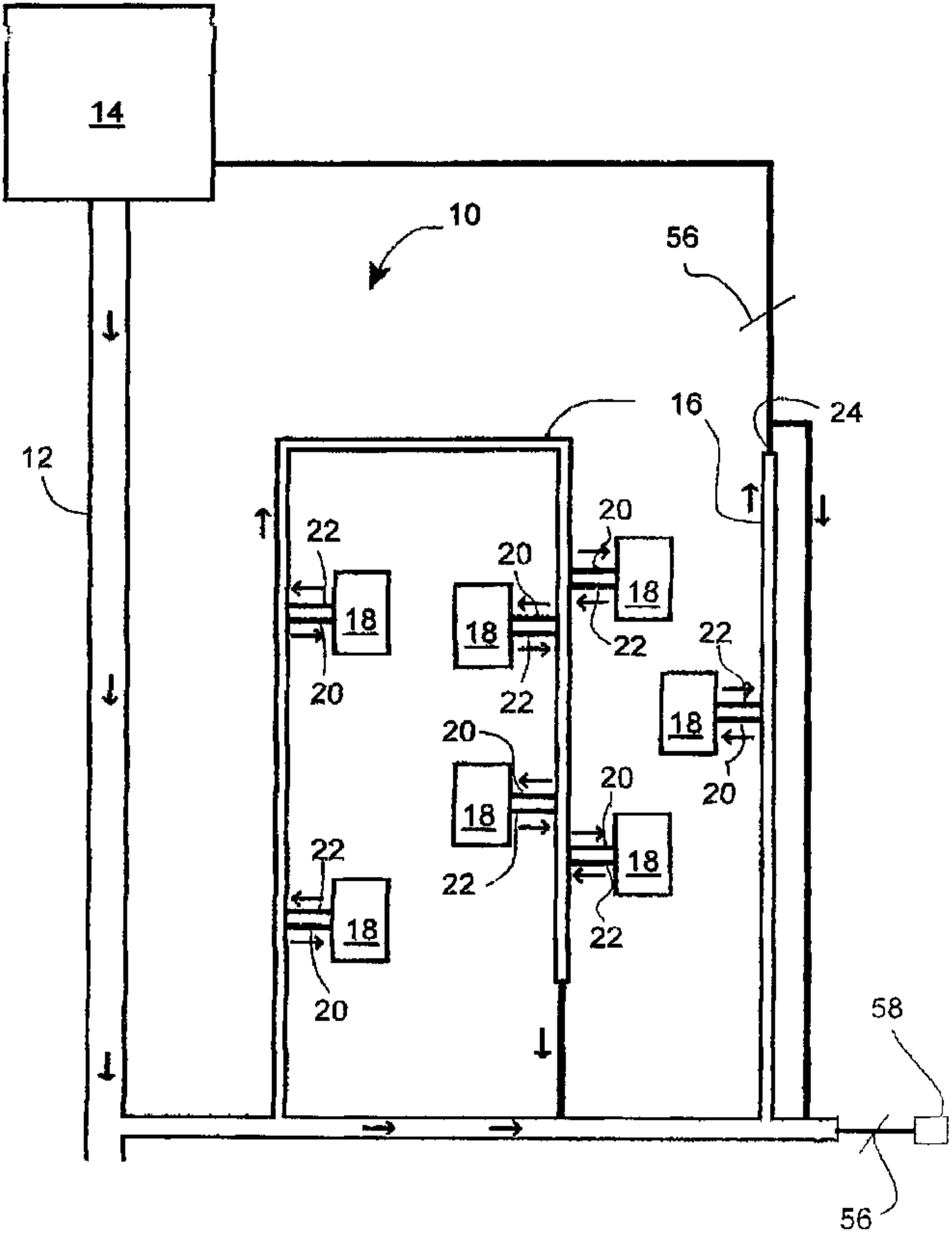


FIG. 2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