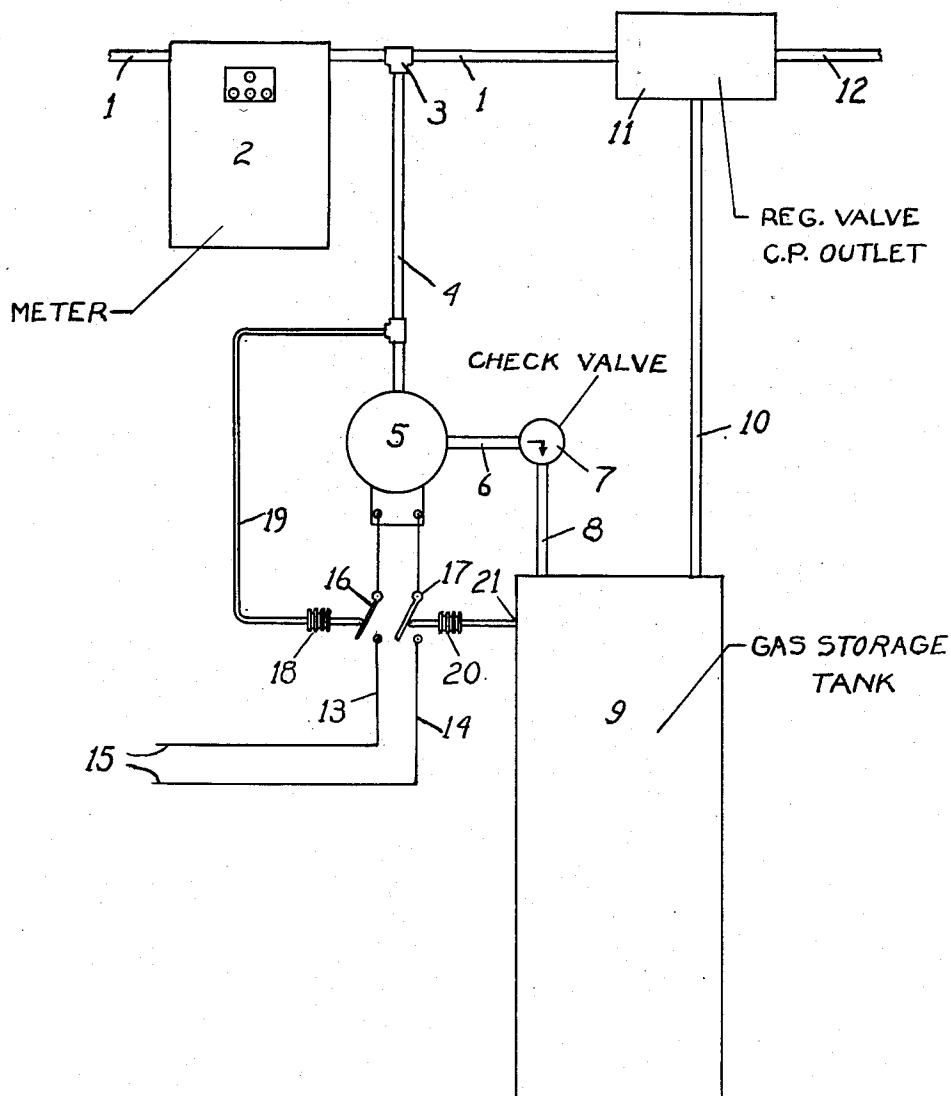


April 27, 1954

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GAS SUPPLY SYSTEM
Filed Nov. 16, 1951

2,676,876



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UNITED STATES PATENT OFFICE

2,676,876

GAS SUPPLY SYSTEM

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Application November 16, 1951, Serial No. 256,773

3 Claims. (Cl. 48—190)

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This invention relates to new and useful improvements in gas supply systems, and more particularly to an arrangement for storing and supplementing the supply of natural or manufactured gas for domestic appliances during periods of heavy load upon the commercial gas mains.

It has been found in many locations that during extremely cold weather when the load is especially heavy on the supply of gas for heating and other purposes that the pressure will frequently drop so low that a proper flame cannot be maintained in gas furnaces or stoves, and frequently these fires will go out altogether.

It is therefore one of the objects of this invention to provide a new and improved gas supply system which will provide a means for supplementing the decreased supply of natural gas during periods of heavy load on the gas supply mains.

Another object is to provide a gas supply system having a means for storing natural gas during periods of light load upon the gas mains and to reintroduce this stored gas into the gas mains or supply conduits to supplement the decreased quantity of gas available during periods of heavy load.

Another object is to provide a gas supply system having a means for compressing gas and storing the same and including pressure operated controls for the compressor to maintain the gas in storage at a predetermined value.

Another object is to provide a gas supply system of the general character hereinafter set forth which is simple to construct and assemble and easily operated.

Other objects will become apparent throughout the specification and claims as hereinafter related.

This invention comprises the new and improved construction and arrangement of parts and their operative relation one to the other, which will be described more fully hereinafter and the novelty of which will be particularly pointed out and distinctly claimed.

In the accompanying drawing, to be taken as part of the specification, there is clearly and fully illustrated one preferred embodiment of this invention, in which drawing the figure shown is a diagrammatic showing of a gas supply system which is the subject of this invention.

Referring to the drawing by characters of reference, there is shown a gas supply conduit 1 which is connected to a gas main, not shown, and is connected to a gas meter 2. Downstream from the gas meter 2 there is a T-connection 3 having a conduit 4 connected to the inlet side of

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an electrically operated compressor 5. The compressor 5 discharges compressed gas through an outlet conduit 6, a check valve 7, and another conduit 8 leading to a gas storage tank 9. An outlet conduit 10 from the storage tank 9 is connected to a pressure regulating valve 11 of the mixing type. The regulating valve 11 is connected to the conduit 1 and to the conduit 10 and has a discharge conduit 12. This valve is of conventional construction and includes a pressure regulator for admitting high pressure gas from the storage tank 9 so that gas discharging through the outlet conduit 12 will remain at constant pressure independently of the drop in pressure in the conduit 1. It is seen, therefore, that gas from the high pressure storage tank 9 will be added at the regulating valve or mixing valve 11 only when the pressure in the conduit 1 drops below a predetermined value. The compressor 5 has an electric circuit comprising wires 13 and 14 leading to a suitable power source 15. In the wires 13 and 14 there are provided switches 16 and 17, respectively. The switch 16 is controlled by a suitable pressure responsive means such as a bellows 18 connected by a conduit 19 for response to pressure in the conduits 1 and 4. The switch 17 is actuated by a suitable pressure responsive means such as a bellows 20 which is connected as at 21 to the gas storage tank for actuation in response to pressure therein. The relation of the pressure responsive bellows 18 and 20 to the switches 16 and 17 is such that the switch 16 will be closed only when the pressure in the main gas supply conduit 1 is above a predetermined value, and the switch 17 will be closed only when the pressure in the gas storage tank 9 is below a predetermined value.

From the foregoing description it is seen that whenever the pressure in the storage tank 9 is below a predetermined value the switch 17 will be closed. If at this time the pressure in the conduit 1 is above a predetermined value (say, at a normal pressure), the switch 16 will be closed and the compressor 5 will supply compressed gas through the conduit 6, check valve 7, and conduit 8 to the storage tank 9 until the pressure therein is increased to a point at which the pressure responsive bellows 20 opens the switch 17 and stops the compressor. As long as there is high pressure gas in the storage tank 9, it can be supplied to the supply conduit 1 to supplement the flow of gas therein whenever the pressure in the conduit 1 drops below a predetermined value, all subject to the control of the pressure regulating or mixing valve 11. It is easily seen that

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while this system is shown as having a single storage tank, additional tanks could be used with this system to provide additional storage capacity.

It will be obvious to those skilled in the art that while there has been disclosed herein only one form of the invention, there could be numerous modifications thereof without departing from the scope of this invention as defined in the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent of the United States is:

1. In a gas supply system, a supply conduit, an electrically operated compressor having its intake connected to said conduit and operable to withdraw gas from said conduit and compress the same, an electric circuit for said compressor, a storage tank connected to receive compressed gas from said compressor, a pair of switches controlling said compressor circuit, means responsive to pressure in said storage tank to close one of said switches at a predetermined low pressure therein, means responsive to pressure in said conduit to close the other of said switches when conduit gas pressure is above a predetermined value, a constant pressure mixing valve connected to said conduit and to said storage tank and having an outlet for discharge of gas at a predetermined pressure, and said valve including pressure responsive means operable to maintain said predetermined pressure in said conduit by the controlled addition of compressed gas from said storage tank.

2. In a gas supply system, a supply conduit, a meter connected in said conduit, an electrical operated compressor having its intake connected to said conduit downstream from said meter and operable to withdraw gas from said conduit and compress the same, an electric circuit for said compressor, a storage tank connected to receive

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compressed gas from said compressor, a check valve connected between said compressor and said storage tank permitting flow only into said tank, a pair of switches controlling said compressor circuit, means responsive to pressure in said storage tank to close one of said switches at a predetermined low pressure therein, means responsive to pressure in said conduit to close the other of said switches when conduit gas pressure is above a predetermined value, a constant pressure mixing valve connected to said conduit and to said storage tank and having an outlet for discharge of gas at a predetermined pressure, and said valve including pressure responsive means operable to maintain said predetermined pressure in said conduit by the controlled addition of compressed gas from said storage tank.

3. In a gas supply system, a supply conduit, an electrically operated compressor having its intake connected to said conduit and operable to withdraw gas from said conduit and compress the same, an electric circuit for said compressor, a storage tank connected to receive compressed gas from said compressor, a pair of switches controlling said compressor circuit, means responsive to pressure in said storage tank to close one of said switches at a predetermined low pressure therein, means responsive to pressure in said conduit to close the other of said switches when conduit gas pressure is above a predetermined value, and control valve means connected to said conduit and said storage tank for controlling the flow of gas therebetween.

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