

(No Model.)

T. G. HALL.

APPARATUS FOR THE MANUFACTURE OF GAS.

No. 389,567.

Patented Sept. 18, 1888.

Fig. 1.

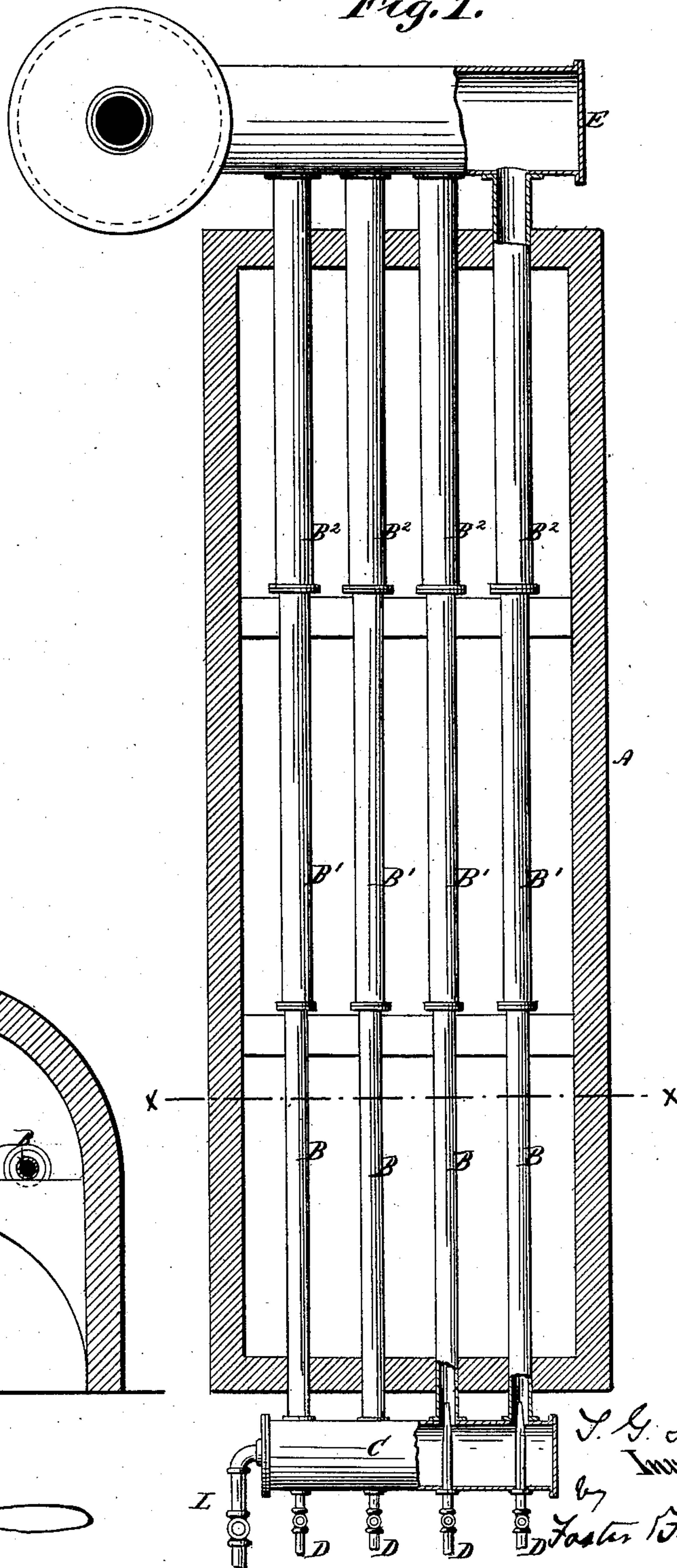
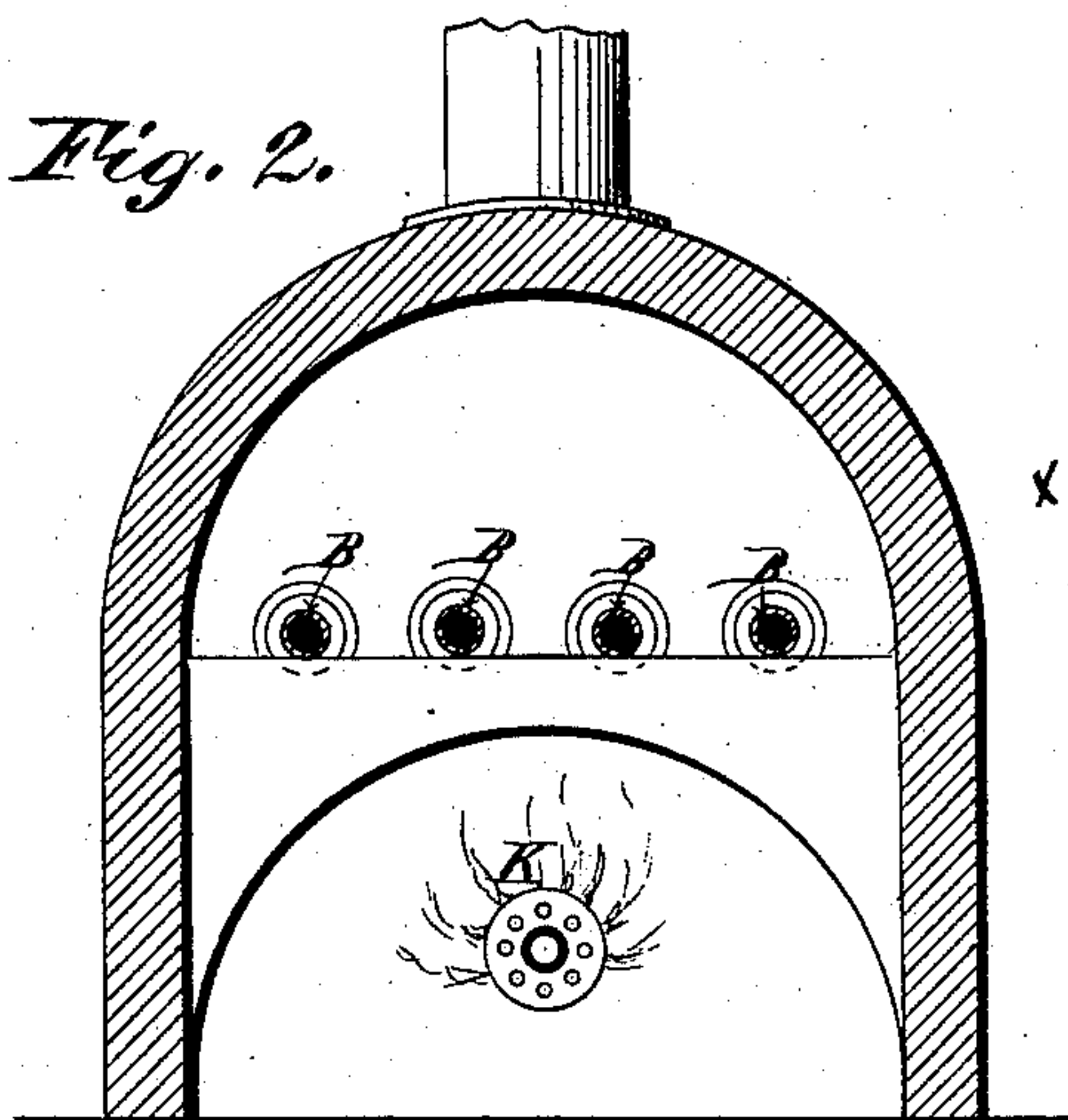


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

THURSTON GORDON HALL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE INTERNATIONAL OIL GAS COMPANY OF NEW YORK.

APPARATUS FOR THE MANUFACTURE OF GAS.

SPECIFICATION forming part of Letters Patent No. 389,567, dated September 18, 1888.

Application filed July 22, 1887. Serial No. 244,999. (No model.)

To all whom it may concern:

Be it known that I, THURSTON GORDON HALL, of the city of Chicago, State of Illinois, have invented a new and useful Improvement in Apparatus for the Manufacture of Gas, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

My invention relates to an improvement in apparatus for producing that kind of gas which is made by the union of steam and a hydrocarbon fluid and a subsequent heating of the steam in suitable pipes, thereby decomposing the steam, together with the hydrocarbon, and producing as a result a gas the basis of which is hydrogen carrying a hydrocarbon illuminant. In practice I do the heating by subjecting the steam and hydrocarbon in pipes of continually-increasing diameter, containing fragments of granite, which acts upon the steam and hydrocarbon to convert the same into a fixed gas. Thence the gas passes through suitable connections to a scrubber, where it is subjected to the action of a spray of water, which washes the gas and deposits out of it at that point any oil which may have gone over with the gas without being converted. This oil rests in the bottom of the washer and floats upon the descending water. I am enabled to draw out the water as it falls, and by means of a siphon-connection to remove the oil at intervals, as it may be desired. In order to accomplish this result I make my scrubber between a chamber of considerable area below the outlet of the gas-machine. In this same chamber I may add air, if desired, so as to reduce the illuminating power of the gas.

My invention will now be readily understood from the accompanying drawings, in which similar letters refer to similar parts.

Figure 1 represents a plan view of my apparatus; Fig. 2, a section through the same on the line *x x*.

My gas apparatus consists, generally, of an external structure adapted to be internally heated, containing pipes B B' B², which preferably increase in diameter from the front to the back of the apparatus. These pipes connect at the front of the apparatus with a manifold, C, supplied with steam through the pipe L. Oil-injecting pipes D D D D enter the mouths of the pipes B B B B, and steam passing through the pipe L draws the oil after it through the converting-pipes. These different pipes are of course provided with regulating stop-cocks. Thence the gas escapes into the rear manifold, E, large enough to permit the passage of the gas as it is made. The gas passes thence into the scrubber F.

The operation of my apparatus can now be readily understood. The pipes B B' B² are heated by a suitable burner, K. (By preference I use the gas itself to heat these pipes.) These pipes are filled with blocks of granite throughout their entire length about as large as the pipes can conveniently hold. Steam and oil entering by the pipes L and D are affected by the granite in these pipes and converted into a fixed gas, which passes thence into the manifold E. The granite affords large converting-surfaces and stores the heat necessary for the conversion, and has been discovered to be a very beneficial body for the conversion of the steam and hydrocarbon into hydrogen and carbon monoxide and dioxide. The increasing size of the pipes allows for the increasing volume of gas produced as it moves onward through these pipes. Thence the gas, passing through the connection E, enters the scrubber F, where it is thoroughly washed, and the deposited oil removed as it floats upon the surface of the water. I prefer to make the pipes B B B B four inches in diameter, the pipe B' six inches in diameter, and the pipe B² eight inches in diameter.

I find in practice that I can add about fifty per cent. of air for making illuminating-gas. This amount is, however, very variable, depending upon the conditions which may be desired. For heating-gas I do not desire to add air at this point, but add it subsequently at the point of combustion. I prefer to use a low-gravity oil—say 26° Baumé—and I prefer to use an oil prepared by the process of refining hydrocarbon oils for which Letters Patent were granted to me November 8, 1887, No. 372,672.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of a distributing-manifold, G, provided with oil and steam supply pipes, a series of vaporizing-pipes, B B' B², containing granite and increasing in size from the inlet to the outlet, a heating-chamber within
5 which said pipes are situated, and a collecting-manifold, E, to which said pipes are connected, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THURSTON GORDON HALL.

Witnesses:

ANTHONY GREF,
H. COUTANT.