

(No Model.)

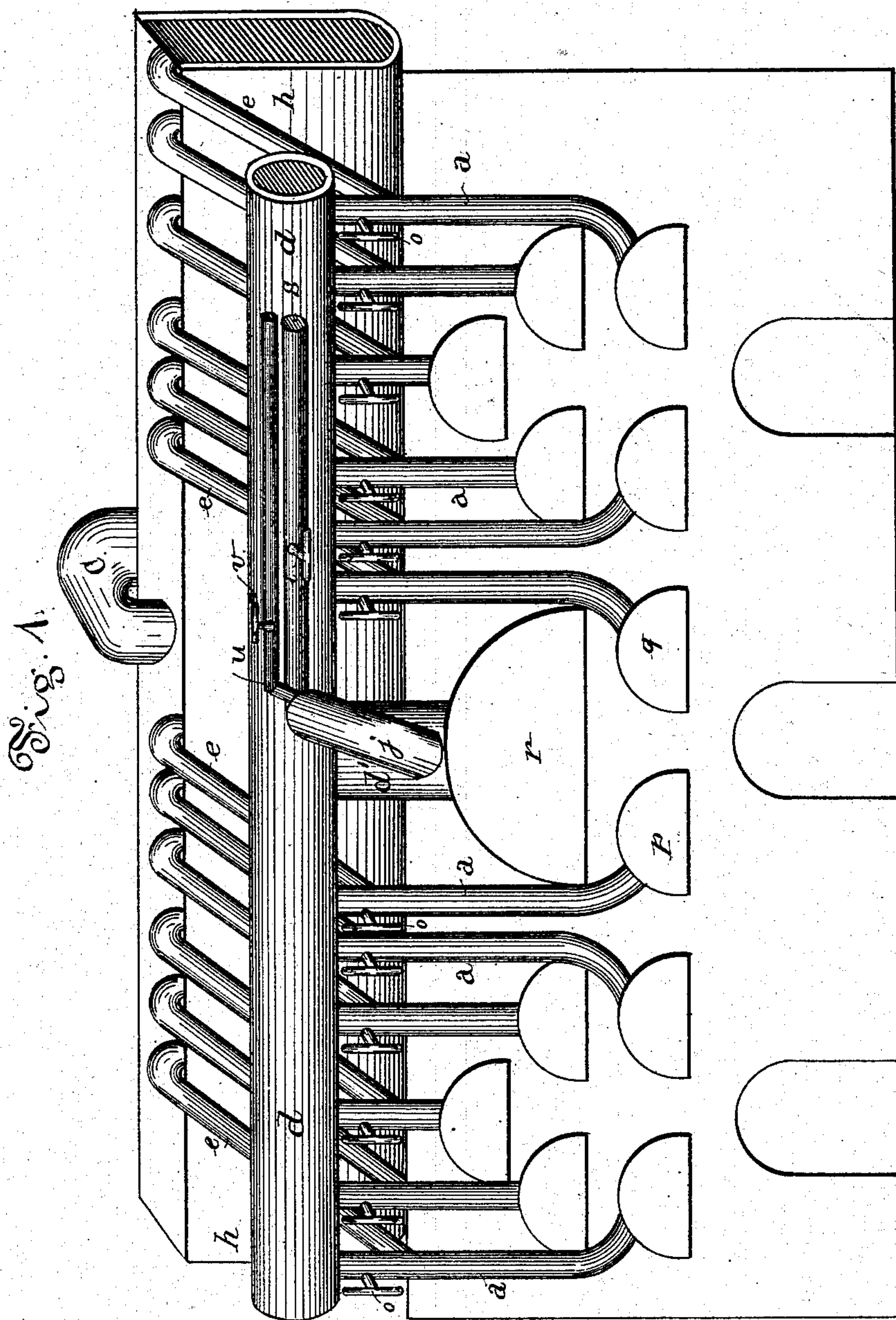
2 Sheets—Sheet 1.

A. STAMM.

PROCESS OF AND APPARATUS FOR MAKING COAL GAS.

No. 291,417.

Patented Jan. 1, 1884.



WITNESSES:

Ad. L. Düterich;
W. Molfenter

INVENTOR.

INVENTOR.
Anton Stamm
By Myer & Co
ATTORNEYS.

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

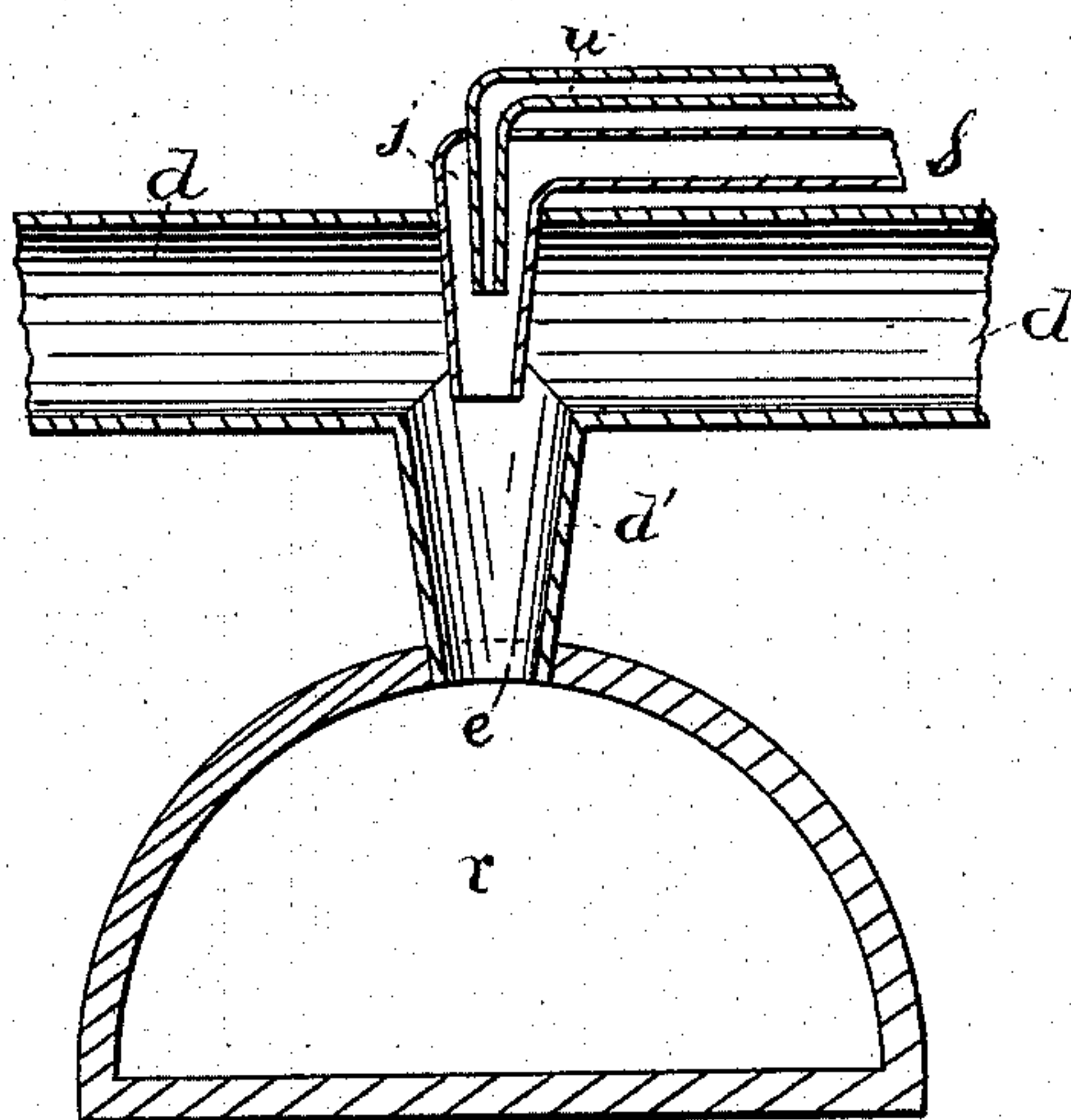
A. STAMM.

PROCESS OF AND APPARATUS FOR MAKING COAL GAS.

No. 291,417.

Patented Jan. 1, 1884.

Fig. 2.



WITNESSES

Chas. R. Burr
W. E. Bowen

INVENTOR
Anton Stamm
By *Myers*
Attorney.

UNITED STATES PATENT OFFICE.

ANTON STAMM, OF LEADVILLE, COLORADO.

PROCESS OF AND APPARATUS FOR MAKING COAL-GAS.

SPECIFICATION forming part of Letters Patent No. 291,417, dated January 1, 1884.

Application filed September 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, ANTON STAMM, a citizen of the United States, residing at Leadville, in the county of Lake and State of Colorado, have
5 invented certain new and useful Improvements in Process of and Apparatus for Making Coal-Gas; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in
10 the art to which it appertains to make and use the same.

Hitherto the tarry vapors that arise from freshly-charged coal-gas retorts in gas-houses have usually been allowed to pass directly into
15 the hydraulic main, where they are condensed into tar, and are thereby lost as material for gas-making. In a few cases only these vapors are utilized for gas by driving them from one retort or chamber in which they have originated
20 into an adjoining and reciprocating retort or chamber, in which the distillation of coal is further advanced. For this purpose the retorts are arranged in pairs and connected by pipes and passage-ways. The condensable vapors coming
25 from the last-charged retort are made to pass into the twin retort or chamber by taking advantage of their own tension or pressure, or they are blown into the latter by jets of steam. In the first case the vapors are not removed
30 fast enough from the distilling-retorts to relieve them promptly of the pressure. In the latter case, when steam is used as the sole propelling agent, it results in such a large admixture of steam with the tarry vapors that the resulting
35 gas has its illuminating-power thereby reduced.

The object of my invention is to convert these tarry vapors, as they are given off from the fresh charges of bituminous coal in gas-retorts during the early part of the distillation, into a
40 fixed gas by injecting them into a separate retort filled with incandescent coke, and driving them through the mass of said coke by means of the combined action of a jet of compressed gas and a comparatively small jet of steam. The coke-retort, in which the tarry vapors are
45 converted into gas, I call the "regenerator." I attain the object of my invention by the apparatus shown in the accompanying drawings, in which—

50 Figure 1 is a perspective view of my plant for making coal-gas by my improved method, and Fig. 2 is a vertical section of the combined

steam and gas injector *j* and pipes *d* and *d'* and *u* and *s*.

In my gas-plant the stand-pipes *a a a*, &c., 55 communicate with the large horizontal connecting-pipe *d*, which is just above the stand-pipes. From the pipe *d* a short vertical pipe, *d'*, reaches down into the top of the regenerating-retort *r*. The injector *j* has its steam-jet 60 and gas-jet nozzles exactly over the mouth of the vertical pipe *d'*, both of them pointing downward into the said mouth.

o o o, &c., are valves for opening and closing the stand-pipes. *eee*, &c., are pipes which 65 lead from the stand-pipes *a a a*, &c., to the hydraulic main *h*. They tap the stand-pipes just below the valves *o o o o*, and carry the gas from the stand-pipes directly to the hydraulic main when the valves *o o o o* are closed. 70

C is the stand-pipe that comes from the rear end of the regenerator *r*. It carries the gas from the latter into the water-main.

The mode of operation in applying my invention is as follows: The regenerator *r* is at 75 certain intervals—say every six hours—filled with coke, and is constantly kept at a bright-red heat. The distilling-retorts *p q*, &c., are charged with bituminous coal at certain intervals as follows: If the time allowed for the distillation of the gas in each retort be equal to *h* 80 hours, and if there are, for instance, twelve retorts connected with one regenerator, then one of the distilling-retorts ought to be charged every $\frac{h}{12}$ hours. If, therefore, the time for distilling each charge be six hours, then the time 85 from the charging of one of the distilling-retorts to the charging of the next succeeding one ought to be $\frac{h}{12}$ or one-half hour. Now, supposing the retort *p* has just been charged, then the valve 90 *o*, Fig. 1, that belongs to the stand-pipe of this last-charged retort, *p*, is opened and kept open for some time, in order to let the tarry vapors given off from the said last charge of coal pass into the main connecting-pipes *d* and *d'*, and 95 through them into the regenerator *r*. After one-half hour the next retort, *q*, is charged with bituminous coal. Then the valve *o* that belongs to the stand-pipe connected with the retort *q* is opened, &c. The valve *o* in the stand-pipe 100 belonging to the first-charged retort, *p*, is then closed, in order to cause the gas produced in the retort *p* (which is by this time a permanent gas) to pass directly into the hydraulic main *h*

by means of the pipe *e*. After one-half hour more another retort is charged with fresh coal. Then the valve *o* in its stand-pipe is opened, while the valve *o* in the stand-pipe belonging to *q* may then be closed, &c. Thus the tarry vapors that arise from one fresh charge of coal after another are made to pass for a certain length of time into the connecting-pipes *d* and *d'*, and from the latter they are blown into the regenerator *r*. The injecting of the vapors into the regenerator *r* and through the mass of incandescent coke in the same is effected by the combined action of a jet of compressed gas and a small jet of steam, both of which issue together from the nozzle of the injector *j*, inside of the pipe *d'*, with sufficient force to propel the said vapors into and through the coke. By their contact with the incandescent coke in the regenerator *r* the tarry vapors are converted into a fixed gas fit for lighting and heating. Now, I do not claim, broadly, to convert these vapors into gas by driving them into and through other more highly heated retorts than those are from which they have originated, nor the reciprocating action between retorts arranged in pairs where these vapors are generated in one retort and converted into gas in the mate of the former, and vice versa; nor do

I claim the application of steam by itself as the sole means for injecting the tarry vapors into the regenerating-retorts.

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

1. The improvement in the process of manufacturing gas, which consists in converting the tarry vapors given off from fresh charges of bituminous coal in gas-retorts, during the early part of the distillation, into a fixed gas by injecting such vapors, by the combined action of a jet of gas under pressure and a small jet of steam, into and through a mass of incandescent coke in a separate retort, substantially as shown and described.

2. In a plant for manufacturing coal-gas, the combination, with the common distilling-retorts *p q*, the stand-pipes *a a*, and the hydraulic main *h*, of the connecting-pipes *d* and *d'* and *e e e*, the gas and steam pipes *s* and *u*, the injector *j* for gas and steam, and the regenerating-retort *r*, all substantially as shown and described.

ANTON STAMM.

Witnesses:

H. B. METCALF,
J. KOPRIO.