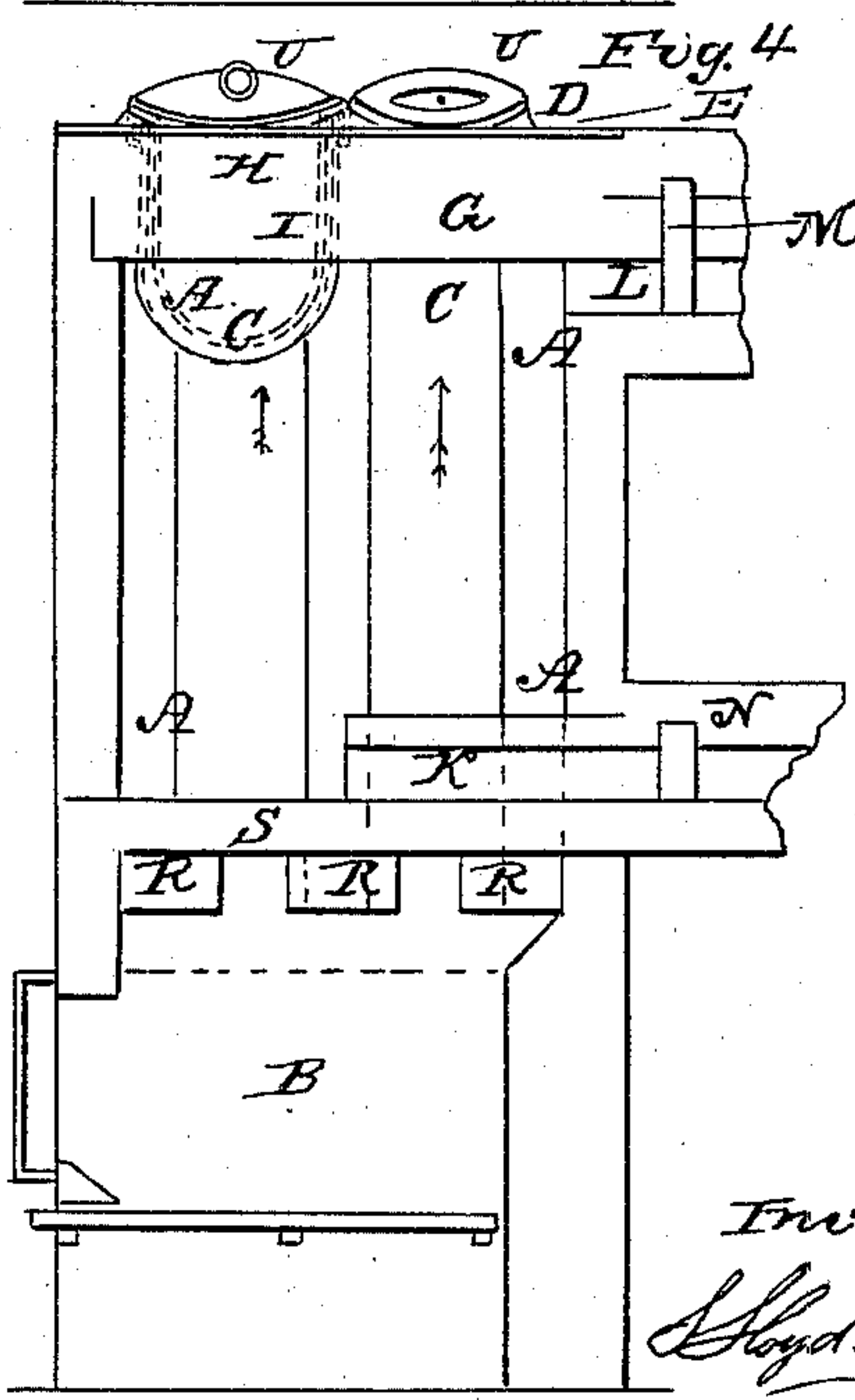
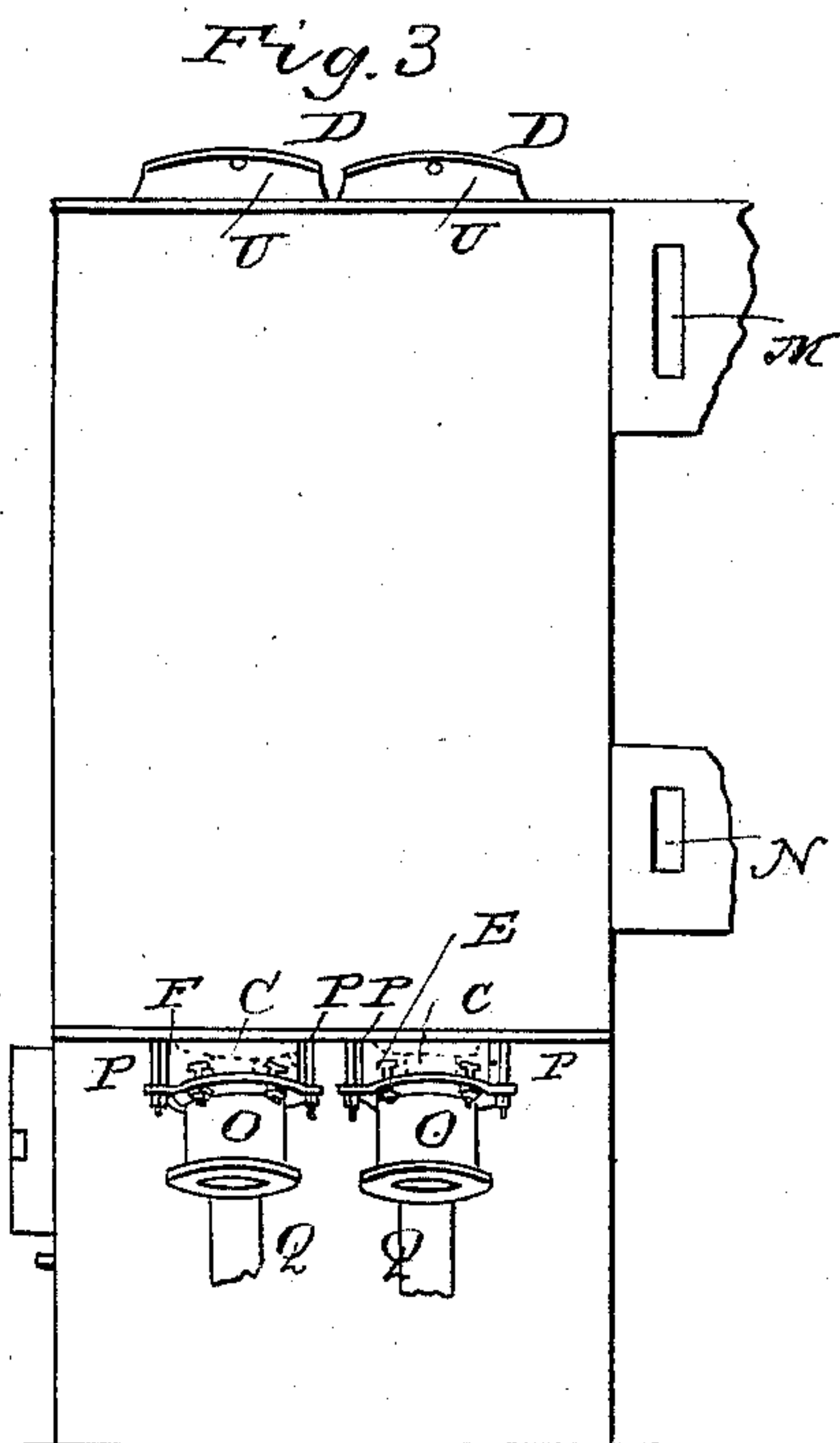
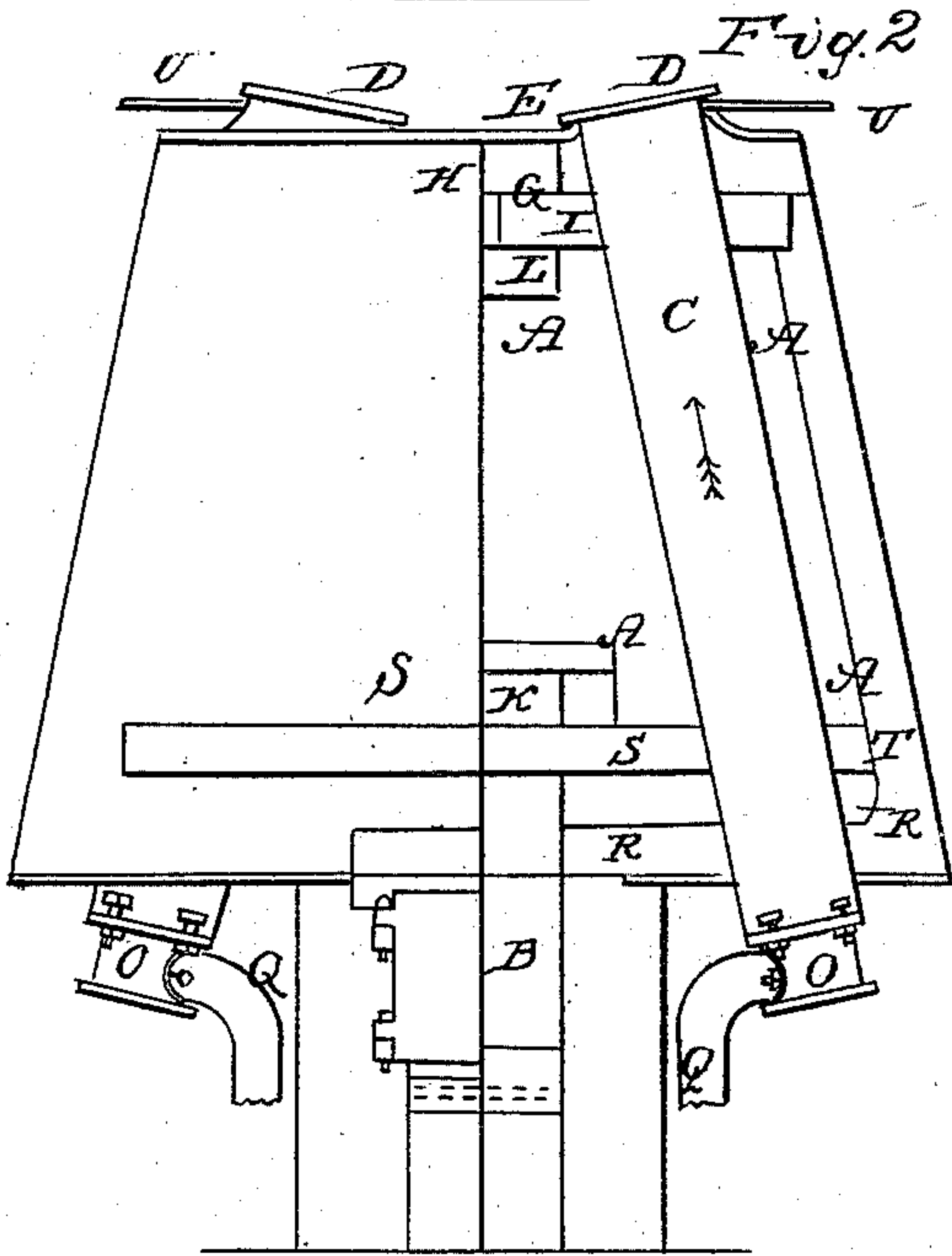
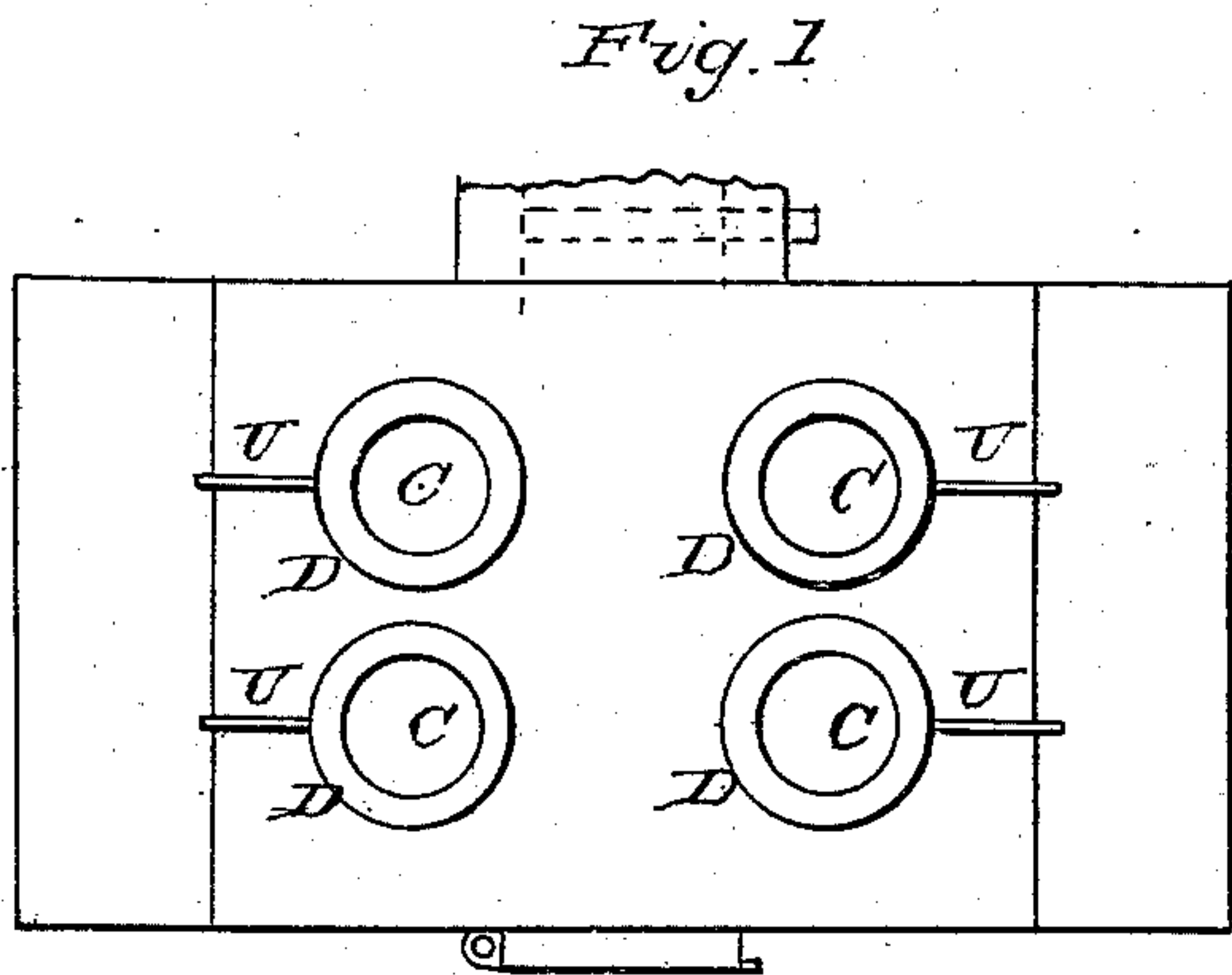


S. L. WIEGAND.  
 Manufacture of Illuminating Gas.

No. 39,605.

Patented Aug. 18, 1863.



Witnesses.  
 John White  
 Dennis Mudd

Inventor  
 Lloyd Wiegand

# UNITED STATES PATENT OFFICE.

S. LLOYD WIEGAND, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN THE MANUFACTURE OF ILLUMINATING-GAS.

Specification forming part of Letters Patent No. 39,605, dated August 18, 1863.

*To all whom it may concern:*

Be it known that I, S. LLOYD WIEGAND, of the city of Philadelphia and State of Pennsylvania, have invented a new and useful improvement in the constructing of furnaces and retorts for the manufacture of gas by the patented process of J. Milton Sanders; and I do hereby declare that the following is a full and precise description thereof, reference being had to the accompanying drawings and the letters of reference marked thereon.

The nature of my invention consists in the construction of retorts of such a form as to be more easily cast, and to be more durable when in use, than the retorts used heretofore for the same purpose, and also the manner of arranging the retorts in the oven or furnace so as to promote the durability of the retort.

To enable others skilled in the art to construct and use my invention, I will now proceed to describe its construction and operation, referring in this description to drawings annexed and making part of this specification.

Figure 1 exhibits a ground plan; Fig. 2, a front elevation with section of the right half; Fig. 3, a side elevation; and Fig. 4, a vertical section in a plane from front to back, exhibiting the arrangement of the flues and dampers.

The oven and furnace are braced in the usual manner by plates or back stays formed to fit the shape of their external surfaces. One of the retorts (shown in Fig. 4) is different from the others, and is arranged for the purpose, using solid materials yielding hydrocarbon vapors. The upper part of this retort is enlarged, and contains a vessel fitting into the enlargement, which interior vessel is perforated in both the bottom and sides, or either, to permit the escape of the vapors which may be evolved by the application of steam and heat to the material placed therein. It is convenient to use a seal or lute of fusible metal to make the joint of the cover of the retort gas-tight; but I do not claim the fusible-metal lute as a part of this invention, the same having been used extensively heretofore; neither do I claim the use of a charging-vessel to introduce solid material into gas-generating retorts, the same being old and well known, the novelty of this arrangement consisting in the combination of the charging-vessel

placed in the upper part of the retort containing carbon in the lower part, and permitting circulation of steam through the contents of the charger to the carbon in the lower part of the retort.

The furnace B, used for the heating of the oven, is of the usual internal construction of those employed for making coal gas. The flames from the furnace-chamber B pass laterally through the flues R R R under the bed-tiles S S, and rise at or near the perpendicular walls of the oven A, as shown at T in Fig. 2.

In an oven, A A A A, placed above a furnace, B, I place two or more retorts, C C, nearly in a vertical position. These retorts C are cylindrical in form, or may be made prismatic, with the upper portion, D, flanged outwardly, so as to find a bearing upon the top or covering plate, E, of the oven A A, and with a flange, F, turned inwardly upon the lower end in such a manner that all parts of the retort below the upper flange, D, are smaller than the opening in the top E of the oven A in which the retorts are used, so that the retorts D D can be withdrawn from the oven A, without breaking the walls of the oven by hoisting D D out from above in the direction of the arrows, Figs. 2 and 4.

The mode of construction of the top or crown G of the oven A is also peculiar. Instead of being made of an arch built of fire-bricks, as is usually done, I construct it of layers of fire-brick tiles H and I, the upper layer, H, covering the joints of the lower, I, so that changes of temperature do not produce a leakage at the joints. At or near the center of the oven A A, &c., is a flue, K, which opens from the oven near the lower part, and leads to the chimney. There is also another flue, L, leading to the chimney from the upper part of the oven. The draft through these flues is controlled by the dampers M and N.

The purpose of employing two flues is to enable the stoker having the furnace in charge to control the heat of the upper and lower portions of the oven independently of each other, and thus secure a uniform heat throughout the oven. The retorts rest upon and are supported by the head-pieces O O, which may be suspended by bolts P P, as shown in the drawing in Fig. 3, or they may be allowed to depend on the discharge or stand pipes Q Q, as shown in Fig. 2. The re-



torts are charged with carbon from the top, and receive the fluid gas material near the upper end through the tubes U U, and the gas generated is discharged from the pipes Q Q, attached to the head-pieces O O, screwed to the lower ends of the retorts by screw-bolts nuts.

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

1. The hereinbefore-described form of retorts, whether cylindric or prismatic, as hereinbefore described, when arranged in the oven

in the manner and for the purpose set forth, and used as hereinbefore specified.

2. The arrangement of flues and dampers, when combined, as set forth, with the retorts, of the form specified.

3. The construction of the top of the oven, when used in combination with the retorts, as hereinbefore specified.

S. LLOYD WIEGAND.

Witnesses:

ISAAC H. STEERER,  
JOHN WHITE.