(No Model.) 2 Sheets—Sheet 1.

A. COZE.

GAS RETORT.

No. 477,834. Patented June 28, 1892.

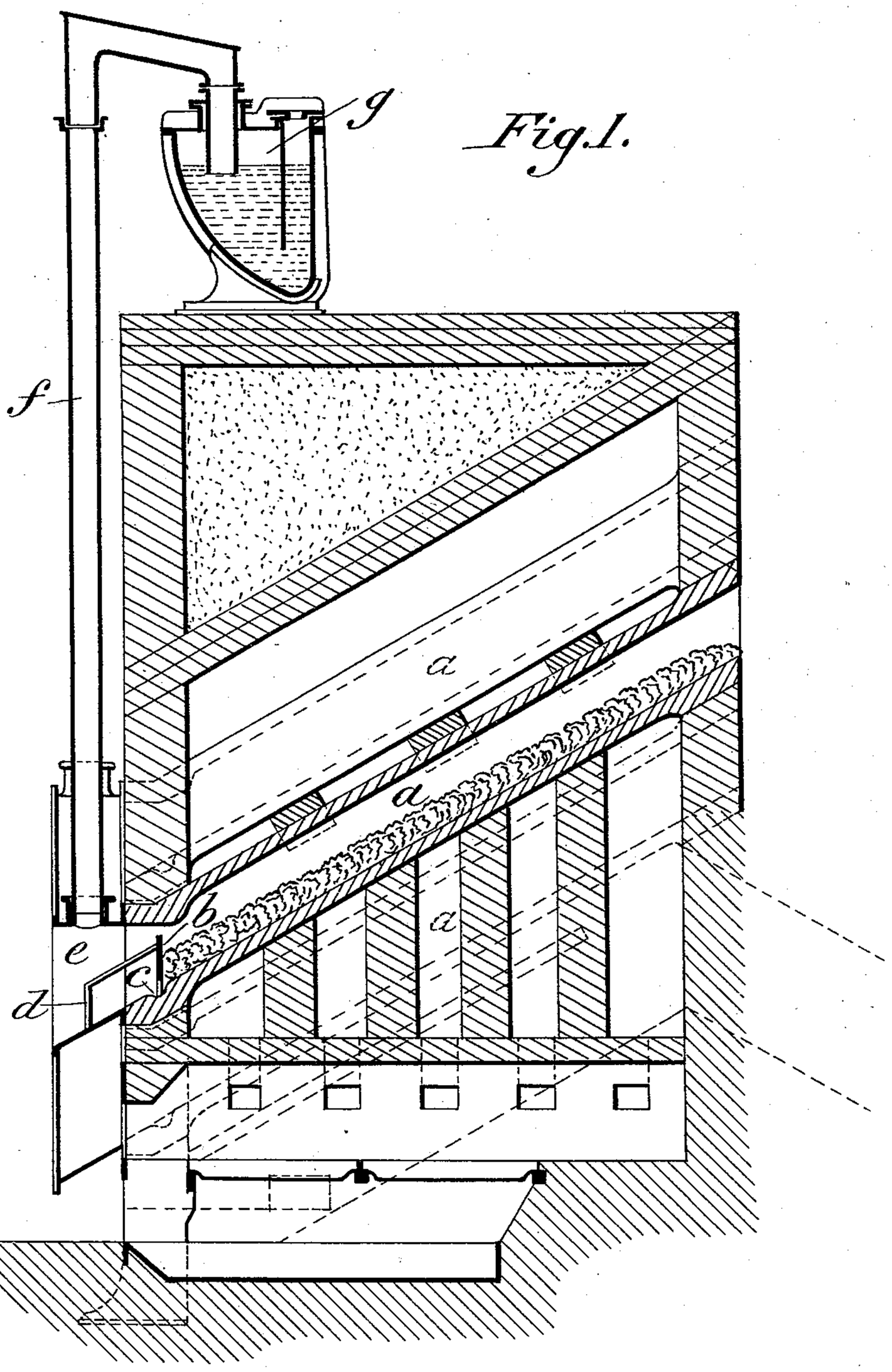

Fig. 1.

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Attys

(No Model.) 2 Sheets—Sheet 2.

A. COZE.

GAS RETORT.

No. 477,834. Patented June 28, 1892.

Fig. 2.

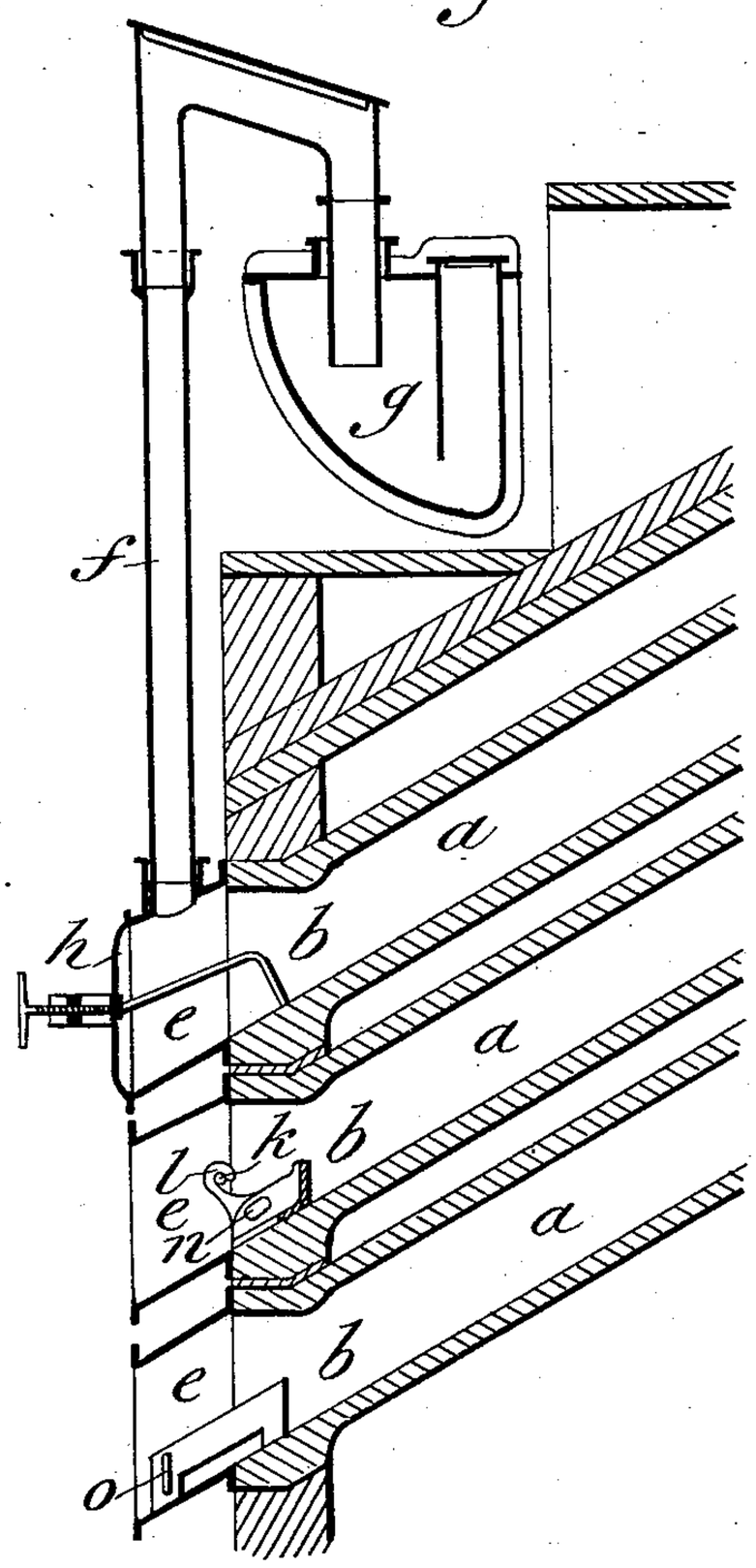


Fig. 3.

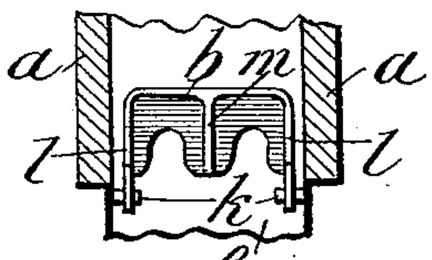


Fig. 4.

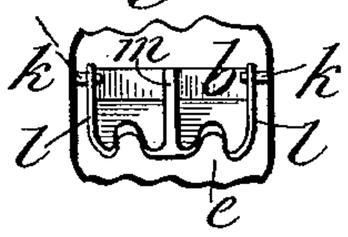


Fig. 5.

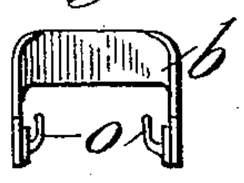
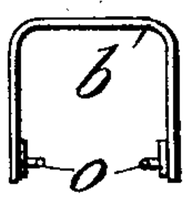


Fig. 6.



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UNITED STATES PATENT OFFICE.

ANDRÉ COZE, OF RHEIMS, FRANCE, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO SOCRATES NEWMAN AND JAMES GREEN, OF ST. LOUIS, MISSOURI.

GAS-RETORT.

SPECIFICATION forming part of Letters Patent No. 477,834, dated June 28, 1892.

Application filed December 21, 1891. Serial No. 415,824. (No model.) Patented in France February 14, 1885, No. 167,044; in Germany March 27, 1885, No. 33,959; in Belgium June 17, 1885, No. 69,316; in England June 20, 1885, No. 7,563; in Italy June 30, 1885, No. 438; in Austria-Hungary October 30, 1885, No. 23,286 and No. 57,022, and in Spain December 22, 1885, No. 7,837.

To all whom it may concern:

Be it known I, ANDRÉ COZE, a citizen of the Republic of France, formerly residing at Rheims, France, but now a resident of Paris, in said country, have invented certain new and useful Improvements in Gas-Retorts, (for which I have obtained Letters Patent in France, No. 167,044, dated February 14, 1885; in Germany, No. 33,959, dated March 27, 1885; in Austria-Hungary, No. 23,286 and No. 57,022, dated October 30, 1885; in Spain, No. 7,837, folio 190ª, dated December 22, 1885; in Italy, No. 438, folio 36, dated June 30, 1885; in Belgium, No. 69,316, dated June 17, 1885, and in England, No. 7,563, dated June 20, 1885,) of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The present invention relates to an improved means and arrangement of parts for effecting the ready discharge of gas-retorts; and to this end the retorts are arranged at the angle of repose and charged from the upper end and provided with a removable stop-plate at the lower end to prevent the coal from entering the mouthpieces on the lower ends of the retorts, from which mouthpieces the gas is led off to the hydraulic main, whereby when the removable stop-plate is withdrawn the retorts may be readily discharged by the coke sliding down the incline of the retorts, and thus effect a saving of labor. By the angle of repose I mean that angle at which the natural fall of the coal when charging a retort from the upper end is sufficient to cause the distribution of the charge in a uniform layer throughout the whole length of the retort parallel with the bottom thereof, or that angle at which the material of its own weight begins to slide down the incline of the retort. The retorts may be automatically discharged by removing the stop-plate referred to and loosening the coke from the sides of the retort, whereupon the coke will slide down the inclined retort without difficulty and effect the automatic discharge of the retort; or the discharge of the retorts may be accomplished by removing the stop-plate and applying slight force to the coke, whereupon the coke will be readily discharged from the lower end of the retorts by sliding down the incline of the same. The removable stop-plates should be applied to the lower end of the retorts, so as to keep the coal out of the mouthpieces upon the lower ends of the retorts, from which mouthpieces the gas-ascension pipes lead to the hydraulic main.

The invention will be best understood by referring to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a gas-retort bench provided with inclined retorts located at the angle of repose, showing one of the retorts in section and furnished with a removable stop-plate at its lower end. Fig. 2 is a sectional elevation of the front part of a gas-retort bench, showing three inclined retorts in section at the angle of repose, each retort provided at its lower end with a modified form of removable stop-plate. Fig. 3 is a plan view of the modified form of removable stop-plate shown in Fig. 2 applied to the middle retort. Fig. 4 is a front view of the same, looking in the retort. Fig. 5 is an elevation of the removable stop-plate shown in the lowest retort in Fig. 2, and Fig. 6 is a plan view of the latter.

The same letters of reference indicate the same parts throughout the several views.

a represents the retorts, placed in a suitable retort-bench or setting at an inclination approximating to that of the angle of repose of the matters with which the retorts are to be charged, or, in other words, at an inclination almost verging on the limit at which the matters to be subjected to distillation would commence to slide down the retorts. This inclination is represented in the example shown as twenty-nine degrees; but it is evident that this angle may be varied to suit the nature and smoothness of the interior of the retorts, the size of the lumps of coal, &c.

The present invention is independent of

any special means of charging the retorts and does not depend upon the retorts being brought to the same or to any particular level or upon the retorts being arranged in any special way, except that the retorts should be placed at the angle of repose and charged from the upper end, which may be done in any suitable manner.

By placing a retort at the angle of repose and charging it from the upper end the charge may be distributed in a layer of uniform thickness without entirely filling the retort—that is to say, the plane of the surface of the charge is about parallel with the floor of the retort, leaving considerable space above the surface of the charge and the top of the retort, which is the most favorable condition for distillation, as it leaves sufficient space in the retort to allow of the gases freely disengaging and enables the distillation to be carried on under the ordinary conditions, as when retorts are charged horizontally.

The arrest of the coal at the lower end of the retort may be effected by means of a removable stop-plate *b*, fitted in grooves *c* in the retort and supported by a leg *d*, resting upon the lower part of a mouthpiece *e*, fitted over the lower end of the retort. From the top of the mouthpiece *e* extends a gas-ascension pipe *f*, leading to the hydraulic main *g*. By utilizing the angle of repose, which permits but a slow passage of material, each particle of coal as it is arrested acts to hold the others in check, thereby preventing the retort becoming filled and permitting the distribution of the coal in a uniform layer, as stated. The retaining-plate *b* does not extend to the top of the retort, but stops short of the top, so as to leave sufficient passage for the gases disengaged from the coal to pass into the mouthpiece and from thence into the gas-ascension pipe *f* to the hydraulic main *g*. As the inclination given to the retorts is nearly sufficient to produce a sliding of the materials contained in them, it will be understood that the least impulse given to the coke will be sufficient to produce an automatic discharge of the coke from the retorts.

It is evident that my system is independent of that of the furnace and may be applied to all kinds of gas-furnaces and to all shapes of retorts. Such applications would only require some slight changes in details.

In Fig. 2 the upper retort is shown as provided with an ordinary lid *h*, to which is attached the stop or retaining-plate *b*, so that when the lid is removed the stop-plate will be withdrawn from the retort and the retort may be readily discharged.

The middle retort in Fig. 2 is shown as provided with a cast-iron retaining-plate *b*, hooked upon lugs *k* on the head or mouthpiece *e* of the retort by means of hooks *l*, secured to the retaining-plate. The said retaining-plate is provided with a mid-rib *m*, having a hand-hole therein to admit of the removal of the stop-plate.

The lowest retort in Fig. 2 is provided with a retaining-plate *b*, of sheet-iron, of U form, with handles *o* at each side, and it is fixed in position by jamming or springing it against the sides of the retort-mouth *e*.

The stop-plate prevents the coal from entering the mouthpieces or heads *e* on the lower ends of the retorts, which mouthpieces extend beyond the retort, setting outside of the furnace, and are consequently comparatively cool, so that if the coal was permitted to enter the mouthpieces and back up against the lids *h* that part of the coal within the mouthpieces would not be subjected to distillation. The gases being let off from the lower end of the retort cause the tarry matter to collect in the mouthpieces, and if the coal were permitted to enter the mouthpieces the tarry matter would commingle with the coal in the mouthpieces and obstruct the lower ends of the retorts, so that the discharge of the retorts could not be readily effected, certainly not automatically. Where the gas is led off from the upper end of the retort, the use of the removable retaining-plate is not so important as when the gas is taken from the mouthpieces upon the lower ends of the retorts, inasmuch as when the gas is taken off from the upper ends of the retorts there is not much tendency of tarry matter collecting in the mouthpieces at the lower ends of the retorts; but the tarry matter in this instance accumulates at the upper ends of the retorts. The chief function, therefore, of the removable stop-plate is that of preventing the clogging of the mouthpieces at the lower ends of the retorts, so as not to interfere with the discharge of the retorts.

Having fully set forth my invention, what I desire to claim and secure by Letters Patent of the United States is—

The combination of an inclined gas-retort located at the angle of repose for the material treated and constructed and arranged to be charged from the upper end, a retort-mouthpiece upon the lower end of said inclined retort, a removable stop-plate at the lower end of said inclined retort for retaining the coal within the retort and preventing it from entering the retort-mouthpiece, and a gas-ascension pipe leading from said retort-mouthpiece to an hydraulic main, whereby when the stop-plate is removed the retorts may be readily discharged.

In testimony whereof I have hereunto set my hand and affixed my seal, this 20th day of November, 1891, in the presence of the two subscribing witnesses.

ANDRÉ COZE. [L. S.]

Witnesses:
E. HEZENART,
FR. MERTENO.