

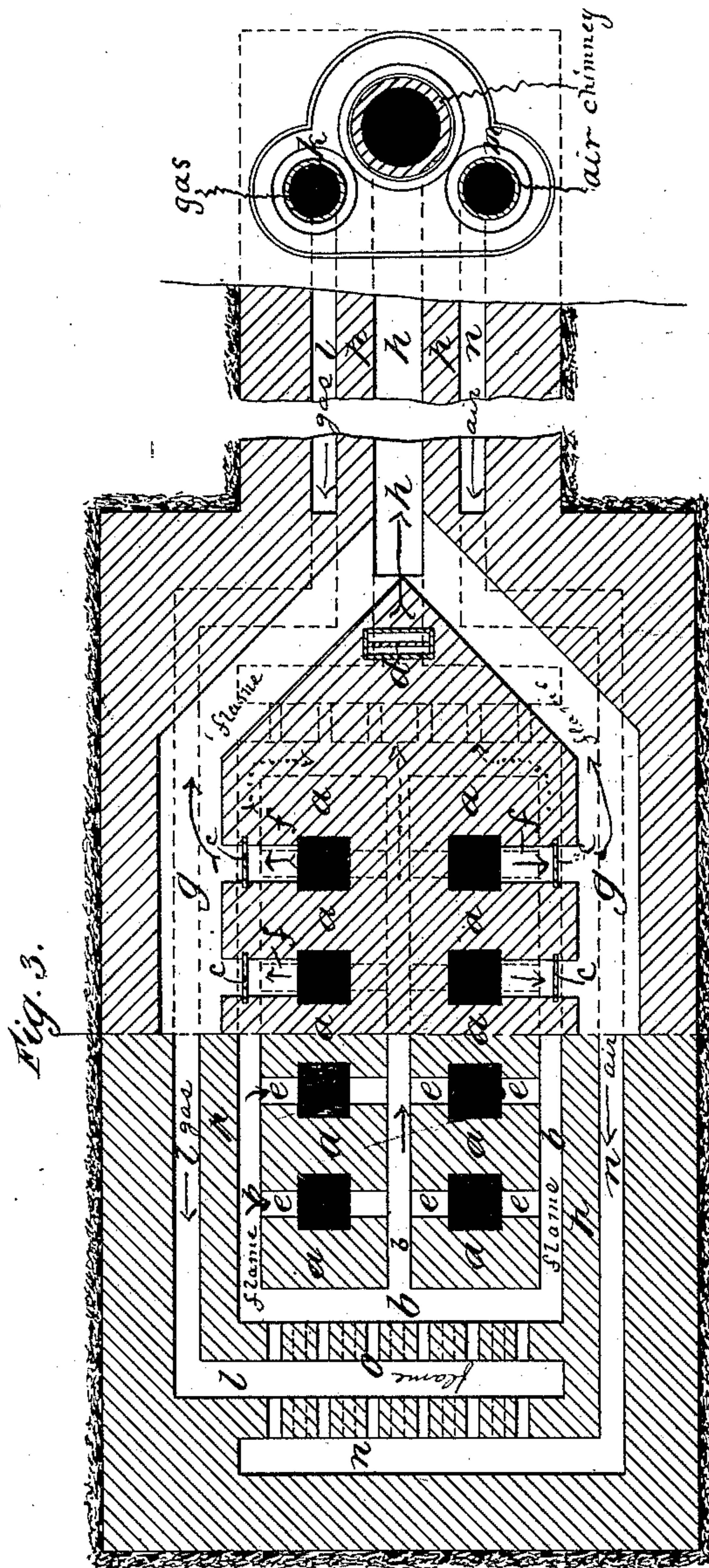
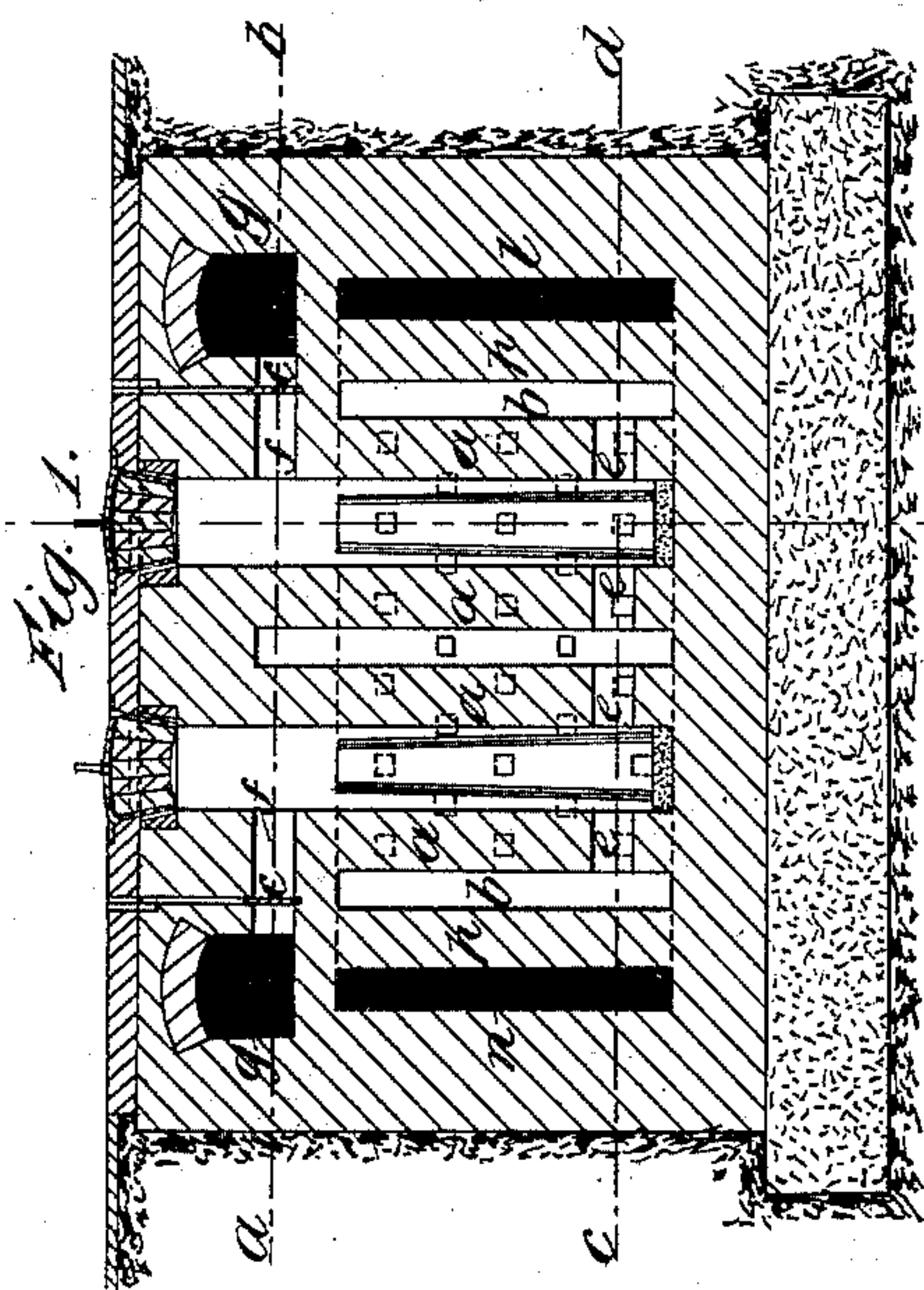
(No Model.)

2 Sheets—Sheet 1.

J. GJERS.
SOAKING PIT FOR STEEL INGOTS.

No. 335,915.

Patented Feb. 9, 1886.



Witnesses:
J. H. Blackwood.
R. G. Dyer

Inventor.
J. Gjers
by W. H. Doolittle, Attorney

(No Model.)

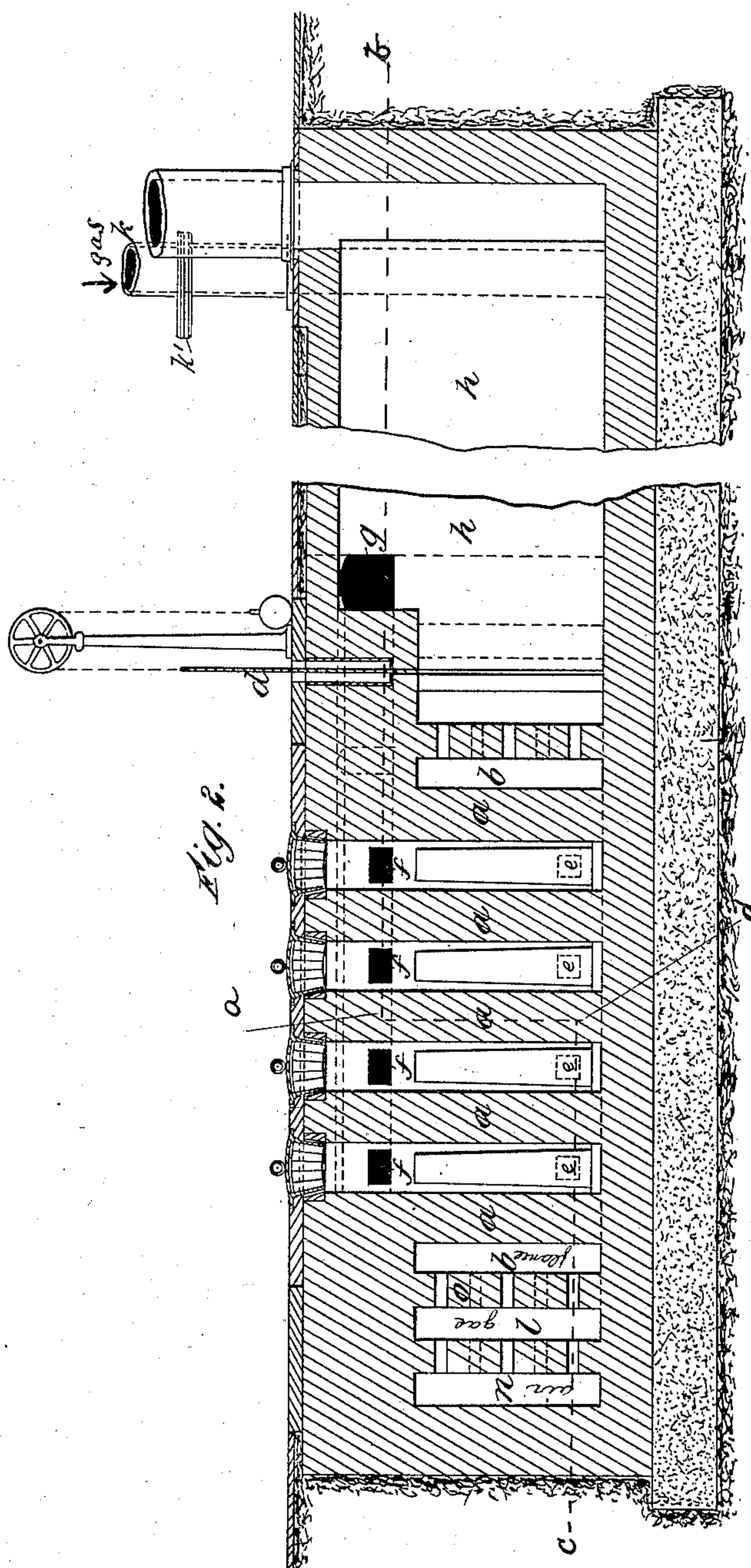
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J. GJERS.

SOAKING PIT FOR STEEL INGOTS.

No. 335,915.

Patented Feb. 9, 1886.



Witnesses:
Josh. H. Blackwood.
R. G. DuBois.

Inventor;
John Gjers
by W. R. Woolridge, Atty.

UNITED STATES PATENT OFFICE.

JOHN GJERS, OF MIDDLESBROUGH-ON-TEES, ENGLAND.

SOAKING-PIT FOR STEEL INGOTS.

SPECIFICATION forming part of Letters Patent No. 335,915, dated February 9, 1886.

Application filed March 27, 1885. Serial No. 160,357. (No model.) Patented in England February 20, 1885, No. 2,333; in France February 21, 1885, No. 167,216; in Belgium February 21, 1885, No. 67,968; in Sweden February 28, 1885, No. 85; in Luxemburg March 1, 1885, No. 505, and in Austria March 13, 1885, No. 47,144.

To all whom it may concern:

Be it known that I, JOHN GJERS, a subject of the Queen of Great Britain and Ireland, residing at Middlesbrough-on-Tees, Kingdom of Great Britain and Ireland, have invented new and useful Improvements in Soaking-Pits for Steel Ingots, of which the following is a specification.

My present invention relates to a further development of the mode or process of treating steel ingots in soaking-pits, for which I obtained Letters Patent of the United States under date the 21st day of August, 1883, No. 283,735. As is well known, the invention forming the subject of that patent is usually carried out in practice in the following manner: The ingot, as soon as it is stripped, is, with the least possible delay, placed upright within a previously-heated upright soaking-pit, which is constructed of a cross-section only slightly larger than that of the ingot and of a depth deeper than the length of the ingot, and then this soaking-pit is immediately covered over with a cover or lid, such as will practically exclude the air. In this pit thus covered the ingot is allowed to stand and "soak" (as I call it) until it assumes throughout a suitable temperature for being rolled or otherwise pressed into a bloom or other shaped article. An experienced workman, as is well known, can judge from the appearance of the ingot when it is in a fit state to be rolled. When starting, the cold pit is first subjected to a preliminary heating, which is usually effected by introducing into the pit in the first instance hot ingots, which, after imparting the requisite heat, are withdrawn and require to be reheated before they are rolled. It has been found that the operation as just above described is perfectly successful if the works have been adapted from the beginning for such treatment, and if charges of recently-cast ingots pass through the soaking-pits with sufficient regularity and rapidity; but in works where the casting of the ingots takes place at some distance from the rolling-mill, or where the ingots produced are either of very small size or are cast at long intervals, it becomes somewhat difficult to preserve such a surplus

of heat in the soaking-pit as is necessary for the attainment throughout the ingots of a sufficient temperature for rolling. To supply additional heat to the walls of the soaking-pits, and also to insure the retention by them of the temperature to which they have been raised, so that they may always be hot enough to receive a new charge of ingots, an arrangement of apparatus has been described in the specification of an application for Letters Patent of the United States by James Riley, filed the same day as my present application.

In another application for Letters Patent of the United States, No. 160,356, filed by me the same day as my present application, I have described means of applying heat internally, the internal heating being effected while there are no ingots in the soaking-pits. Now, according to my present invention I construct and arrange the apparatus in such a manner that the flames or products of combustion can be directed not only upon the internal, but also upon the external walls of the soaking pits or chambers, as I proceed to describe with reference to the drawings.

Figure 1 is a transverse section; Fig. 2, a longitudinal section, and Fig. 3 a sectional plan on lines *a b* and *c d* of Fig. 1.

Referring to these views, it will be seen that the arrangement is such that the brick-work *a* of the soaking-pits can be heated not only from the outside by means of burning gas or products of combustion in the flues *b*, but also from the inside by opening the dampers *c*, closing the damper *d*, and drawing burning gas or products of combustion from the outside flues, *b*, through the openings *e*, through the interiors of the soaking-pits, and through the openings *f* into the chimney-flues *g*, which communicate with the main chimney-flue *h*. Gas enters by the valve *k* and passes along the flue *l*. The air enters by the valve *m* and passes along the flue *n*. The two unite and burn at the openings *o* in the brick-work *a*, so that the heat passing through the walls *p* is always being brought back into the flues *b* and into the soaking-pits.

It is to be understood that valves or mere ordinary sliding dampers are provided at *k*

and *m*, for regulating the admission of gas and air, respectively, as is well understood by those accustomed to furnaces.

At *k* a sliding damper, *k'*, is indicated in Fig. 2.

It will be evident that the arrangement can be adapted to work either with solid or liquid fuel or with producer or natural gas.

It is to be noted that the internal heating is to take place only at times when the soaking-pits do not contain the ingots, the object being to charge the walls of the soaking-pits with heat according to the principle of my original invention, (as set forth in my former specification, No. 283,735, A. D. 1883, above referred to,) without subjecting the ingots to the oxidizing effect of actual contact with flame.

What I claim is—

1. Apparatus for treating steel ingots to equalize their temperature before rolling, comprising a soaking pit or pits and apparatus for heating the same by means of solid or other fuel, the said apparatus connected with the pits by flues having valves or dampers, and the arrangement being such that the flames or products of combustion are directed both to the exterior and to the interior of the walls of the soaking-pits, substantially as described.
2. Apparatus for treating steel ingots to

equalize their temperature before rolling, comprising vertical soaking pits or chambers, surrounding flues or combustion-chambers, other flues connecting said surrounding flues with the interior of the pits, and dampers or valves, the whole so arranged that the flames or products of combustion resulting from the combustion of gas and air in the apparatus, as specified, or from the combustion of solid or liquid fuel in a combustion-chamber in connection with said flues, can be directed upon the internal as well as the external surfaces of the walls of said soaking pits or chambers, substantially as described, and for the purpose specified.

3. The apparatus for treating steel ingots to equalize their temperature before rolling, comprising brick-work *a*, containing vertical soaking-pits, flues *b*, openings *e* and *f*, valves *c* *c*, flues *g*, main chimney-flue *h*, valve *k*, flue *l*, valve *m*, flue *n*, and openings *o*, the whole arranged and operating substantially as described and shown.

JOHN GJERS.

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