

No. 632,116.

Patented Aug. 29, 1899.

L. J. HIRT.  
COKING OVEN.

(Application filed Jan. 24, 1899.)

(No Model.)

2 Sheets—Sheet 1.

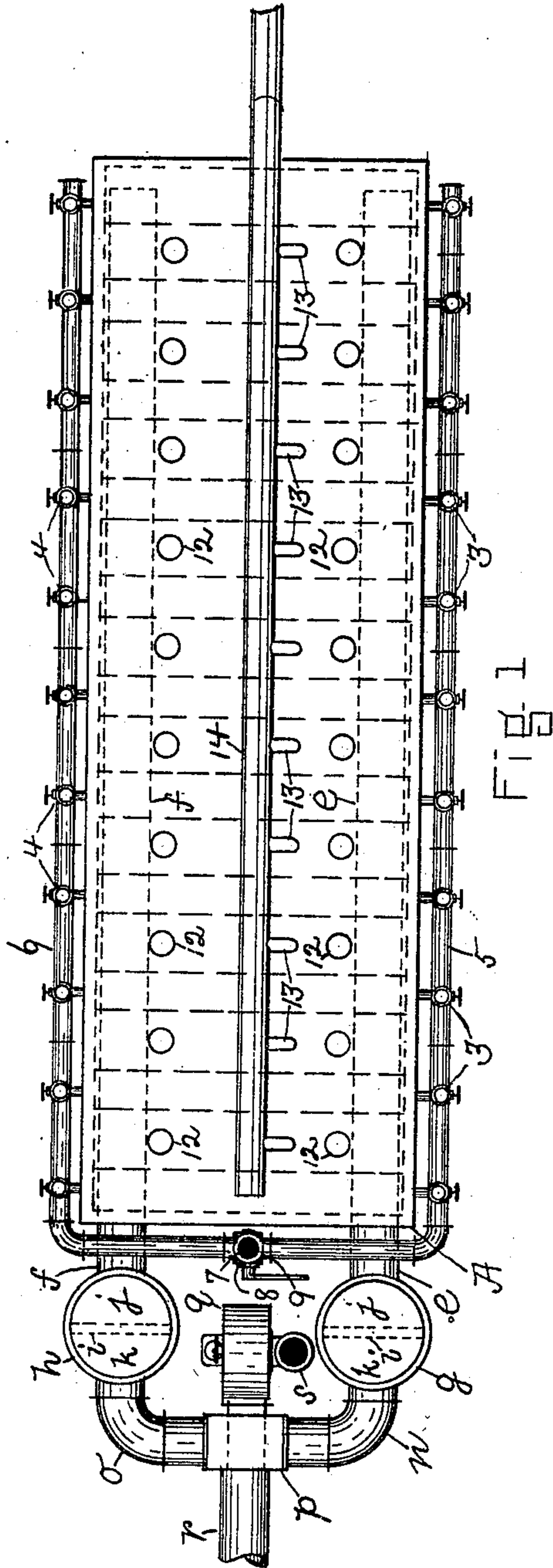


FIG. 1

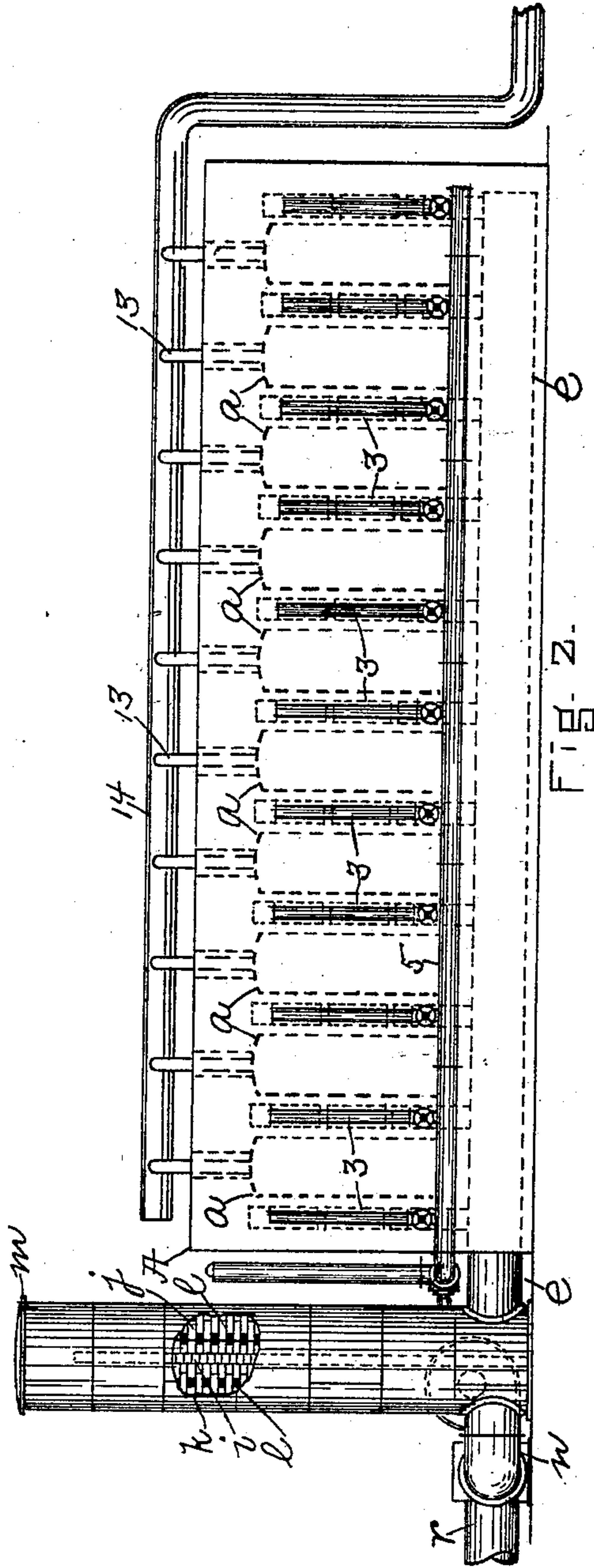


FIG. 2.

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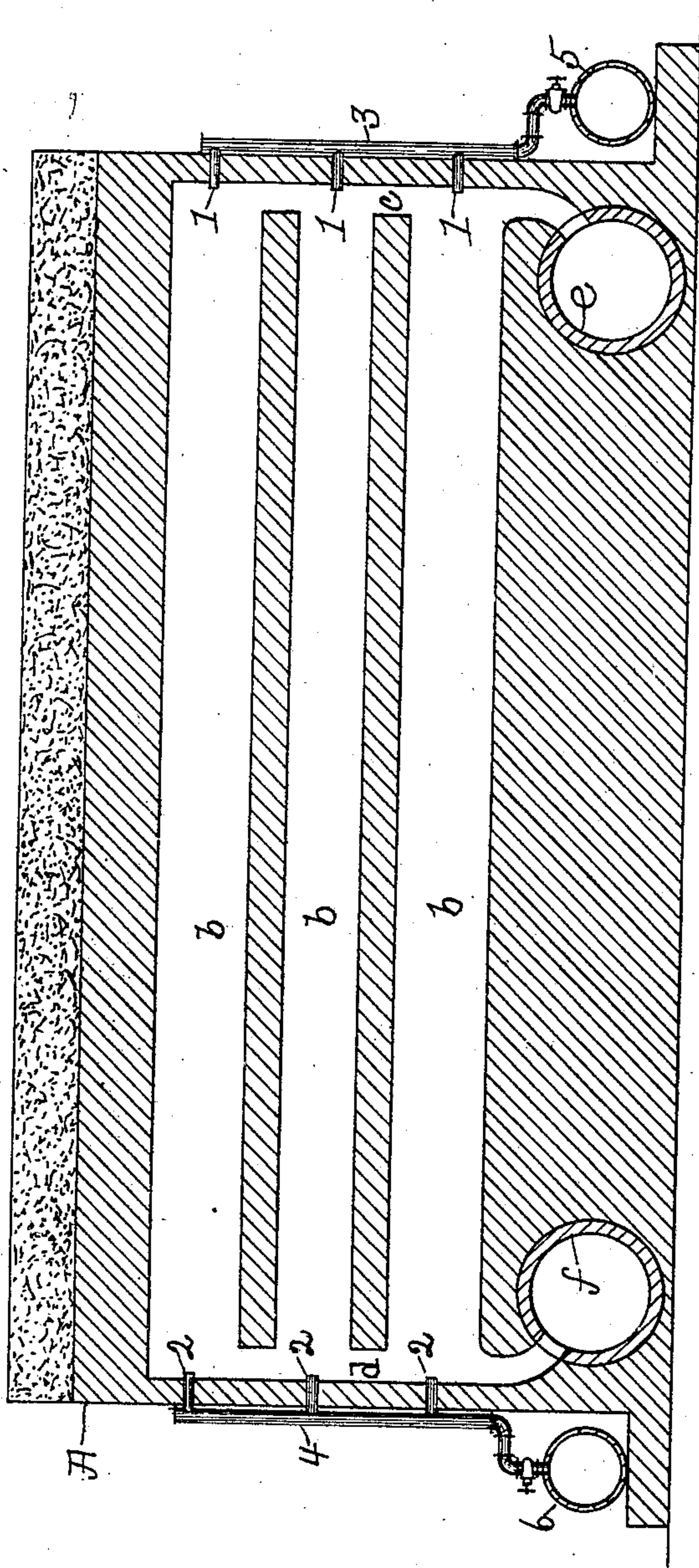


Fig. 2

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# UNITED STATES PATENT OFFICE.

LOUIS J. HIRT, OF BROOKLINE, MASSACHUSETTS.

## COKING-OVEN.

SPECIFICATION forming part of Letters Patent No. 632,116, dated August 29, 1899.

Application filed January 24, 1899. Serial No. 703,216. (No model.)

*To all whom it may concern:*

Be it known that I, LOUIS J. HIRT, a citizen of the United States, residing in Brookline, in the county of Norfolk and State of Massachusetts, have invented an Improvement in Coking-Ovens, of which the following description, in connection with the accompanying drawings, is a specification, like letters and numerals on the drawings representing like parts.

This invention relates to coking-ovens of that class employing regenerators in connection therewith to absorb the heat of the waste gases from the oven. As now commonly practiced, the regenerators are located underneath the coking-oven, which is objectionable, for if the regenerators are built upon the surface of the ground the oven is raised so high as to require the construction of platforms, ladders, &c., which renders the oven unhandy to get at, inconvenient to work, and risky to life, &c. On the other hand, if the oven is placed on a level with the ground—that is, on the ground floor—excavations are required for the regenerators below the coking-oven, as heretofore constructed and known to me, which is not only expensive, but in some localities—as, for instance, on marsh lands—is impractical except at a great expense.

My present invention has for its object to provide a simple and efficient construction of coking-oven and regenerators connected therewith, as will be described, whereby both the oven and the regenerators may be located on the ground surface or floor and the objections above referred to overcome.

Figure 1 is a plan view of a coking-oven embodying this invention; Fig. 2, a side elevation of the oven shown in Fig. 1; and Fig. 3, a transverse section on the line 3 3, Figs. 1 and 2.

A represents the coking-oven, made of brick or other suitable material and provided with a series of vertical retorts *a*, herein shown as ten in number, each retort having on its opposite sides heating-flues, each comprising a series of horizontal passages *b*, herein shown as three in number, (see Fig. 3,) which extend substantially the length of the retort and communicate at their opposite ends with vertical passages *c d*. The vertical end passages *c d* in accordance with this invention

are connected to or communicate with two substantially large flues or pipes *e f*, extended substantially the entire length of the coking-oven, at opposite sides thereof, and, as herein shown, said pipes are located within the brick structure of the oven. The pipes *e f* are extended from one end of the oven and are connected, as shown, to the lower end of regenerators *g h*, located on a level with the coking-oven, and which may be of any suitable construction.

The regenerators *g h* may consist, as shown, of cylindrical casings provided within with vertical partition-walls *i*, extended from the bottom toward the top of the casings to form two chambers *j k*, communicating at their top and provided with baffling or refractory material *l*, such as checker-work or fire-brick. The regenerators are closed at their upper ends by suitable covers, and the chambers *k* are provided at their bottom with inlet-pipes *n o*, which connect with a valve-casing *p*, connected to a blower *q* of any suitable construction and also having a gas-outlet pipe *r*, which leads to the stack or chimney. (Not herein shown.) The blower *q* is provided with an air-inlet *s* and forces air first through one regenerator, as *g*, and the air-pipe *e*, connected to it, while hot gases are passing out of the other pipe *f* through the regenerator *h* to the stack by the pipe *r*.

The heating-flues are supplied with gas at their opposite ends by two sets of burners 1 2, each set consisting of three burners, one for each horizontal passage *b*. The burners 1 2 are connected to vertical branch pipes 3 4, communicating with main supply-pipes 5 6, extended longitudinally of the oven and on the outside thereof, as herein shown, and substantially parallel to the air-pipes *e f*. The gas-pipes 5 6 are connected at one end of the oven to a valve-fitting 7, containing a three-way valve 8 and having a gas-supply or inlet pipe 9, which is connected to a gas-holder or other suitable source of supply. (Not herein shown.)

The course of the gas through the heating-flues is reversed at suitable intervals, it passing in one instance through the pipe 5, branch pipes 3, and burners 1 to the vertical passage *c*, where it meets the heated air from the pipe *e*, and the products of combustion pass



through the horizontal passages *b* down the vertical passage *d* into the pipe *f*, from which the heated gases pass through the regenerator *h* to the stack. The course of the air and gas when reversed is as follows: The gas passes through the pipe 6, branch pipes 4, and burners 2 into the heating-flues, where it meets the air from the pipe *f*, which air has been heated by its passage through the regenerator *h*. The burning gases pass through the horizontal passages *b* to the vertical passage *c*, from which they pass into the pipe *e*, and thence through the regenerator *g* to the stack.

The retorts are provided with fuel-inlets 12 and gas-outlet pipes 13, which connect with a common outlet-pipe 14.

By inspection of Fig. 2 it will be seen that with the arrangement of apparatus herein shown the coking-oven and generators are located on the ground floor and the oven is easily accessible and convenient for working, and the objections hereinbefore recited are overcome.

I claim—

1. The combination with a coking-oven comprising a series of retorts having a series of substantially horizontal flues arranged one above the other on opposite sides of said retorts and extended substantially the length of the same, vertical flues communicating with said horizontal flues at the opposite ends of the same, air pipes or flues on opposite sides of the retorts extended longitudinally of the oven and with which said vertical flues communicate, regenerators located outside of the coking-oven on substantially the same level and each provided with communicating chambers containing baffling material with which said air pipes or flues are connected, and gas-pipes on opposite sides of the oven communicating with the heating-flues, substantially as described.

2. The combination with a coking-oven comprising a series of retorts having a series of substantially horizontal flues arranged one above the other on opposite sides of said retorts and extended substantially the length of the same, vertical flues communicating with said horizontal flues at the opposite ends of the same, air-pipes extended transversely

of the retorts below the same at opposite sides of the oven, regenerators located outside the oven on substantially the same level and with which said air-pipes communicate, a blower connected with said regenerators, means to control the course of air through the regenerators, gas-pipes extended transversely of the retorts and provided with branch pipes having burners, a supply-pipe to which said gas-pipes are connected, and means to control the course of the gas through said pipes, substantially as described.

3. The combination with a coking-oven provided with a series of retorts having a series of heating-flues, of generators located on substantially the same level as the coking-oven and provided with outlet pipes or flues extended on opposite sides of the coking-oven and communicating with the heating-flues, and gas-supply pipes extended on opposite sides of the coking-oven and communicating with said heating-flues, substantially as described.

4. The combination with a coking-oven comprising a series of retorts having a series of substantially horizontal flues arranged one above the other on opposite sides of the retorts and extended substantially the length of the same to form a continuous passage for the heat from end to end of the retorts, vertical flues communicating with said horizontal flues at the opposite ends of the same, air pipes or flues on opposite sides of the retorts with which said vertical flues communicate, regenerators located outside of the coking-oven and with which said air pipes or flues communicate, a blower connected to said regenerators, means to control the course of the air from said blower, gas-pipes on opposite sides of the oven, branch pipes from said gas-pipes provided with burners communicating with the heating-flues, substantially as described.

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

LOUIS J. HIRT.

Witnesses:

JAS. H. CHURCHILL,  
J. MURPHY.