

(No Model.)

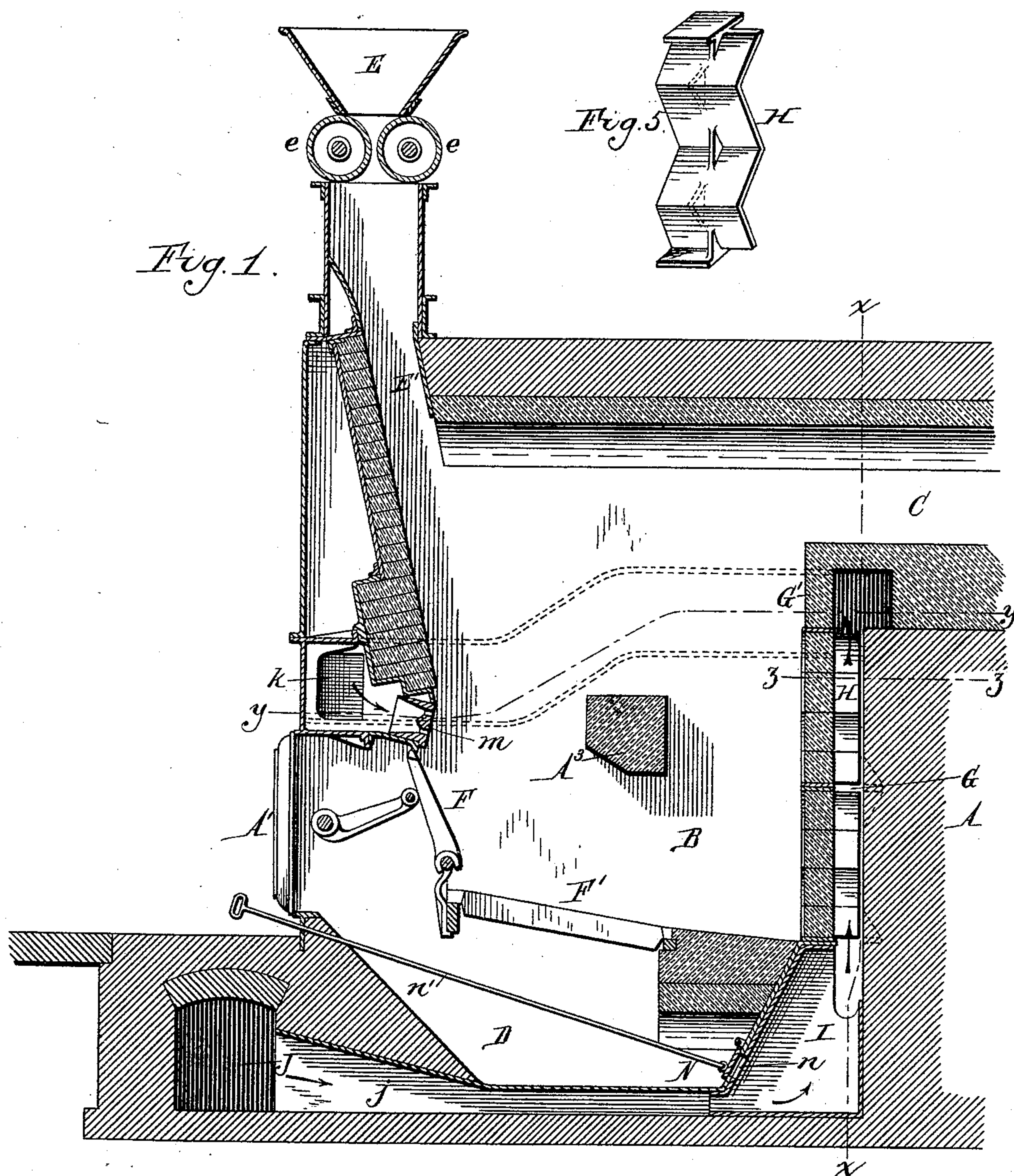
2 Sheets—Sheet 1.

L. P. COHEN & E. HERRMANN.

BAGASSE FURNACE.

No. 500,378.

Patented June 27, 1893.



Witnesses:
Emil Meihart
Chas. F. Burkhardt.

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Fig. 2.

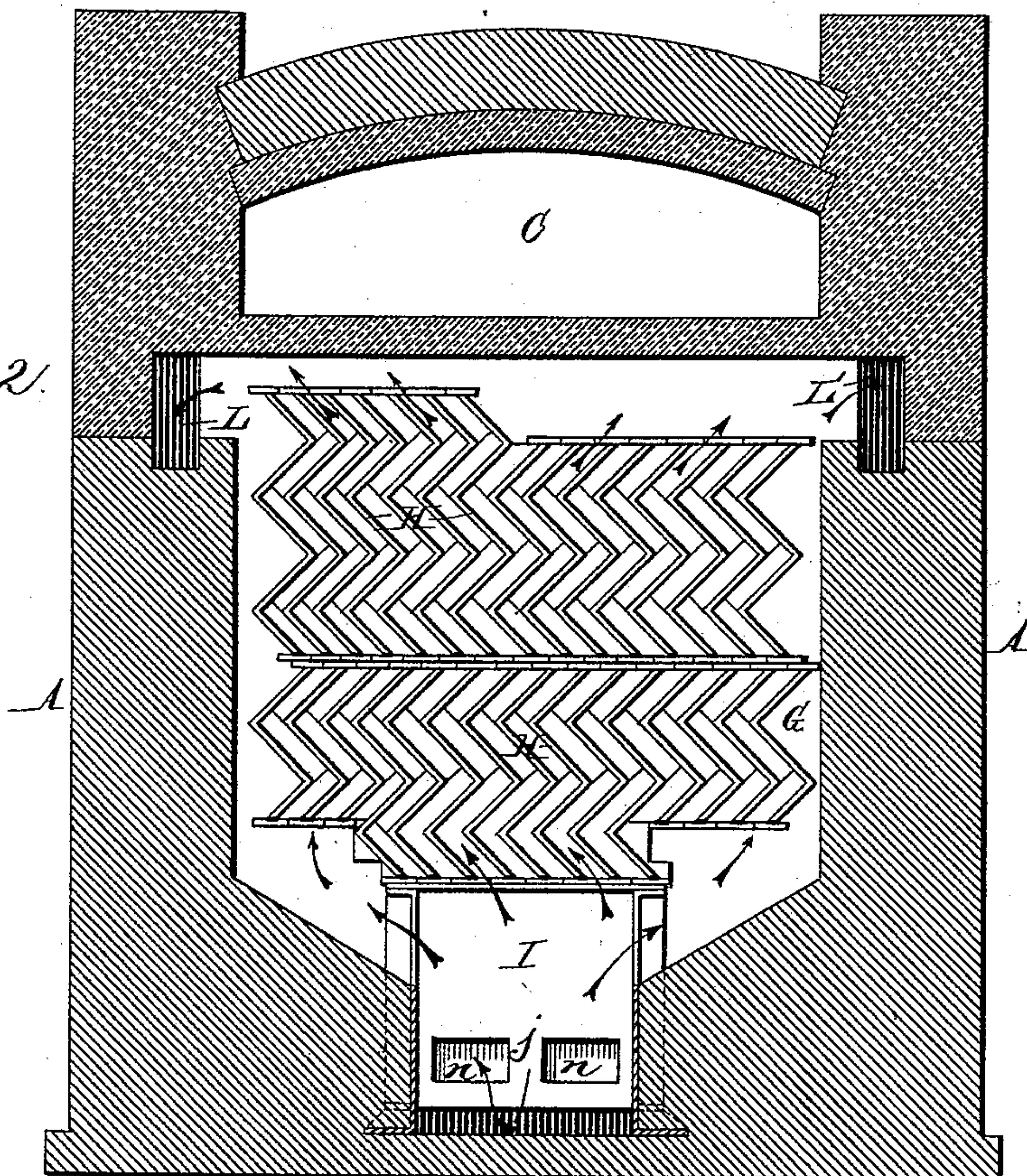


Fig. 4.

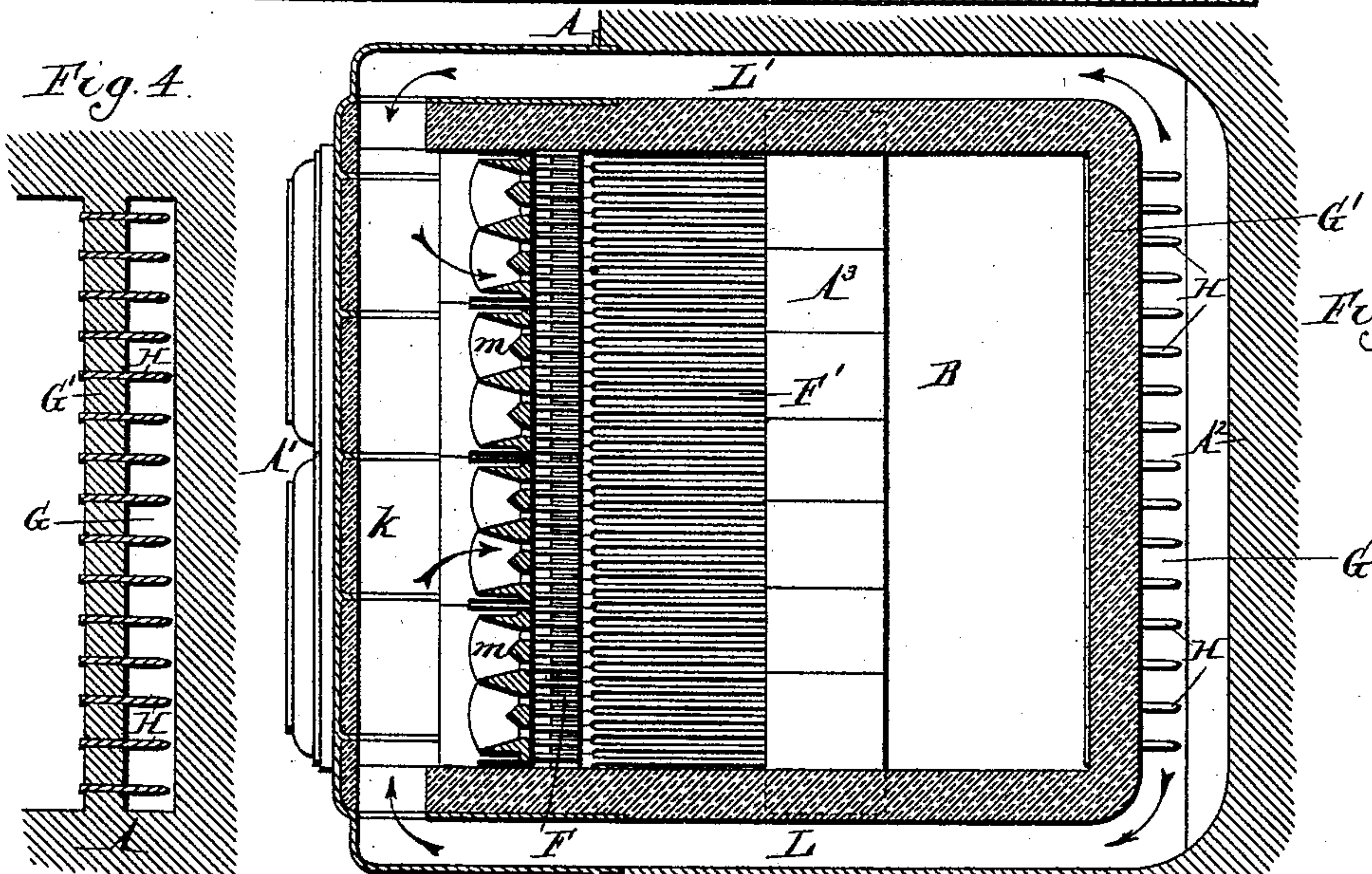


Fig. 3.

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UNITED STATES PATENT OFFICE.

LOUIS PHILIPPE COHEN AND ERNEST HERRMANN, OF PARIS, FRANCE.

BAGASSE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 500,378, dated June 27, 1893.

Application filed August 17, 1892. Serial No. 443,295. (No model.)

To all whom it may concern:

Be it known that we, LOUIS PHILIPPE COHEN and ERNEST HERRMANN, citizens of France, residing at Paris, France, have invented new and useful Improvements in Bagasse-Furnaces, of which the following is a specification.

This invention relates to a furnace which is designed more particularly for consuming bagasse and other similar material containing a large percentage of moisture, and has for its object to increase the efficiency and capacity of this class of furnaces.

In the accompanying drawings consisting of two sheets:—Figure 1 is a vertical longitudinal section of our improved furnace. Fig. 2 is a transverse section thereof in line $x-x$, Fig. 1. Fig. 3 is a horizontal section in line $y-y$, Fig. 1. Fig. 4 is a fragmentary horizontal section in line $z-z$, Fig. 1. Fig. 5 is a fragmentary perspective front view of one of the heating plates.

Like letters of reference refer to like parts in the several figures.

A represents the side walls of the furnace, A' the front wall, A² the rear wall, A³ the arch, B the fire or combustion chamber, C the exit flue, and D the ash-pit.

E is the fuel hopper or receptacle surmounting the front portion of the furnace and having its discharge spout connected with a throat E' which extends downward into the combustion chamber and through which the fuel passes upon the grate below.

The feed hopper is provided with feed rollers e which may be operated by any suitable means.

The grate preferably consists of an inclined upper section F and a horizontal or nearly horizontal lower section F'. The inclined section is preferably pivotally supported at its lower end, as shown, and provided with suitable means for shaking it. The mechanism shown in Letters Patent of the United States No. 385,623, granted July 3, 1888, to us may be employed for this purpose.

G represents a transverse air-heating chamber formed between the rear wall G' of the combustion chamber and the rear wall A² of the furnace, and H are metallic heating plates embedded in the rear wall of the combustion chamber and extending rearwardly into the heating chamber G. These heating

plates extend forwardly through the rear wall of the combustion chamber, as shown in Figs. 1 and 4, so as to expose their front edges to the heat in the combustion chamber, the portions of the plates in the heating chamber being heated by conduction and in turn heating the air passing through said chamber. The heating plates H extend from the bottom to the top of the heating chamber G and are separated by spaces through which the air ascends. The plates are preferably constructed of zig-zag form, as shown in Fig. 2, so as to increase the heating surface and retard the ascent of the air and thereby more effectually heat it.

I represents a cold air supply box or chamber arranged centrally underneath the air-heating chamber G and communicating at its upper end with the latter. Cold air is supplied to the box I by a longitudinal conduit j which connects with a passage J into which the air is delivered by a fan or blower.

k represents a hot-air delivery chamber or box arranged horizontally in the front portion of the furnace above the inclined grate and below the throat E' and which is connected with the air-heating chamber G by longitudinal flues or passages L L' arranged in the side walls of the furnace and extending from the upper corners of the heating chamber to opposite ends of the delivery chamber, as shown in Figs. 2 and 3. The delivery chamber is provided in its rear wall with exit passages, tuyeres or nozzles m whereby the hot air is directed rearwardly into the mass of bagasse or other fuel and banked above the inclined grate and between the latter and the arch A³, thereby expelling the bulk of the moisture contained in the bagasse preliminary to its descent upon the grate below. In order to distribute the ascending air about equally between the flues L L', the upper portions of the zig-zag plates on one side of the vertical center line of the air heating chamber are arranged to trend laterally toward the side of the furnace in which the passage L is located, while the upper portions of the plates on the opposite side of said center line are arranged to trend toward the other side passage L', as shown in Fig. 2. The air entering the lower portion of the heating chamber G becomes heated by contact with

the heating plates, in ascending to the top of the chamber and flows through the longitudinal flues *L L'* forwardly into the delivery chamber *k* from which it issues rearwardly through the delivery nozzles *m*.

n are openings formed in the front wall of the air box *I* for the purpose of supplying air to the ash pit below the grates. These openings are controlled by valves *N* which are adjusted by rods *n'* extending through the front of the furnace.

The bagasse supplied to the feed hopper is fed downward through the throat *E'*, and upon arriving opposite the delivery nozzles of the hot-air chamber *k*, is subjected to the action of the heated air which evaporates a large percentage of the moisture in the bagasse before the same descends upon the inclined grate. The bagasse is thus dried to a considerable extent by the time it reaches the grate, whereby its consumption is expedited and the efficiency and capacity of the furnace are materially increased.

We claim as our invention—

1. The combination with the combustion chamber and the grate, of a bagasse feeder arranged above the grate at the front of the furnace, a delivery chamber for heated air arranged across the front of the combustion chamber between the feeder and the grate and provided in its rear wall with openings which deliver the heated air rearwardly upon the bagasse, and an air heating chamber arranged behind the rear wall of the combustion chamber and connected with said front delivery chamber, substantially as set forth.

2. The combination with the combustion chamber and the grate, of a hot air delivery chamber arranged above the grate, an air heating chamber arranged adjacent to the combustion chamber and connected with said delivery chamber, and heating plates arranged in said heating chamber and extending through the wall of the combustion chamber, substantially as set forth.

3. The combination with the combustion

chamber and the grate, of an air heating chamber arranged in the rear wall of the furnace adjacent to the combustion chamber, heating plates arranged in said chamber and extending through the rear wall of the combustion chamber, an air delivery chamber arranged in the front portion of the furnace and having air exits or nozzles in its rear wall above the grate, and a passage connecting said delivery chamber with said heating chamber, substantially as set forth.

4. The combination with the combustion chamber having a throat or inlet in its top for the fuel, and an inclined grate arranged below said throat, of a hot air delivery chamber arranged in the front portion of the furnace and provided in its rear wall with exit openings arranged above the grate, an air heating chamber arranged in the rear portion of the furnace and connected with said delivery chamber, heating plates arranged in said heating chamber and extending to the interior of the combustion chamber, and an air supply chamber or conduit communicating with the lower portion of the air heating chamber, substantially as set forth.

5. The combination with the combustion chamber and the grate, of an air heating chamber arranged adjacent to the combustion chamber, heating plates arranged in said chamber, a hot air delivery chamber receiving the hot air from the heating chamber and provided with nozzles which open into the combustion chamber above the grate, and an air box supplying the cold air to the heating chamber and provided with a valved opening which delivers air into the ash pit below the grate, substantially as set forth.

Witness our hands this 25th day of July, 1892.

LOUIS PHILIPPE COHEN.
ERNEST HERRMANN.

Witnesses:

ROBT. M. HOOPER,
J. CHATEL.