

C. A. DESOBRY.
BAGASSE FURNACE.

No. 25,322.

Patented Sept. 6, 1859.

Fig: 1.

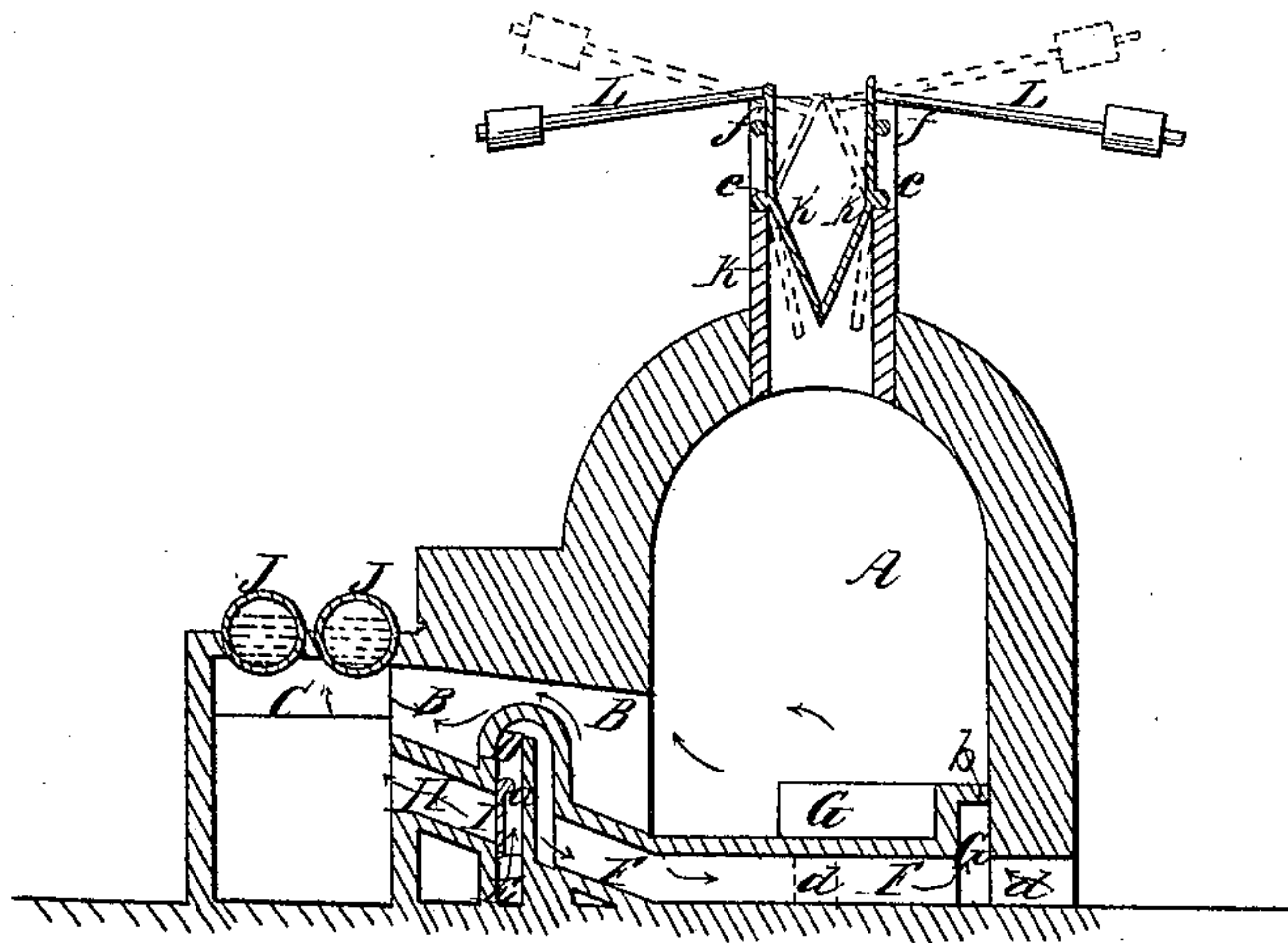


Fig: 2.

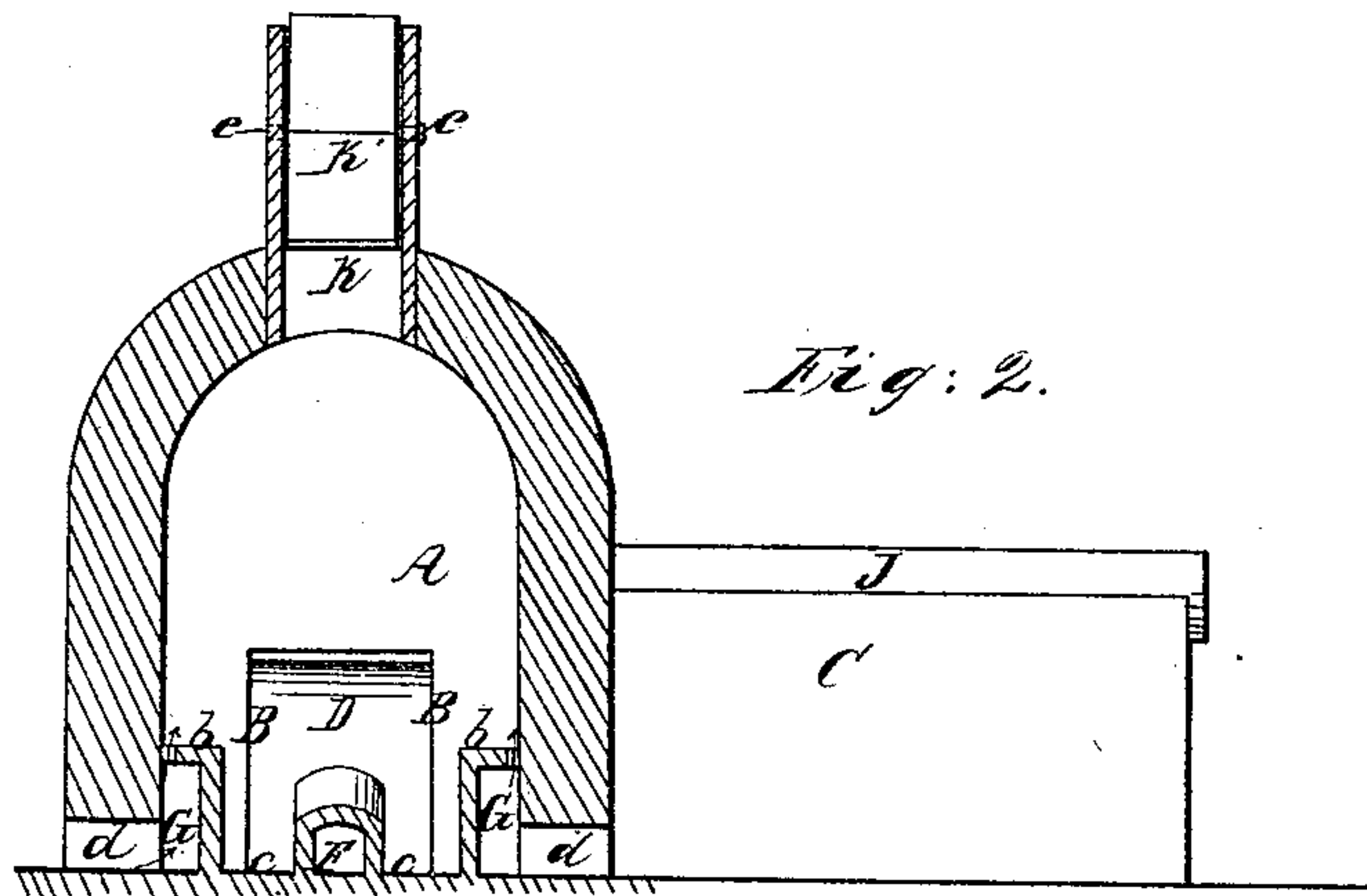
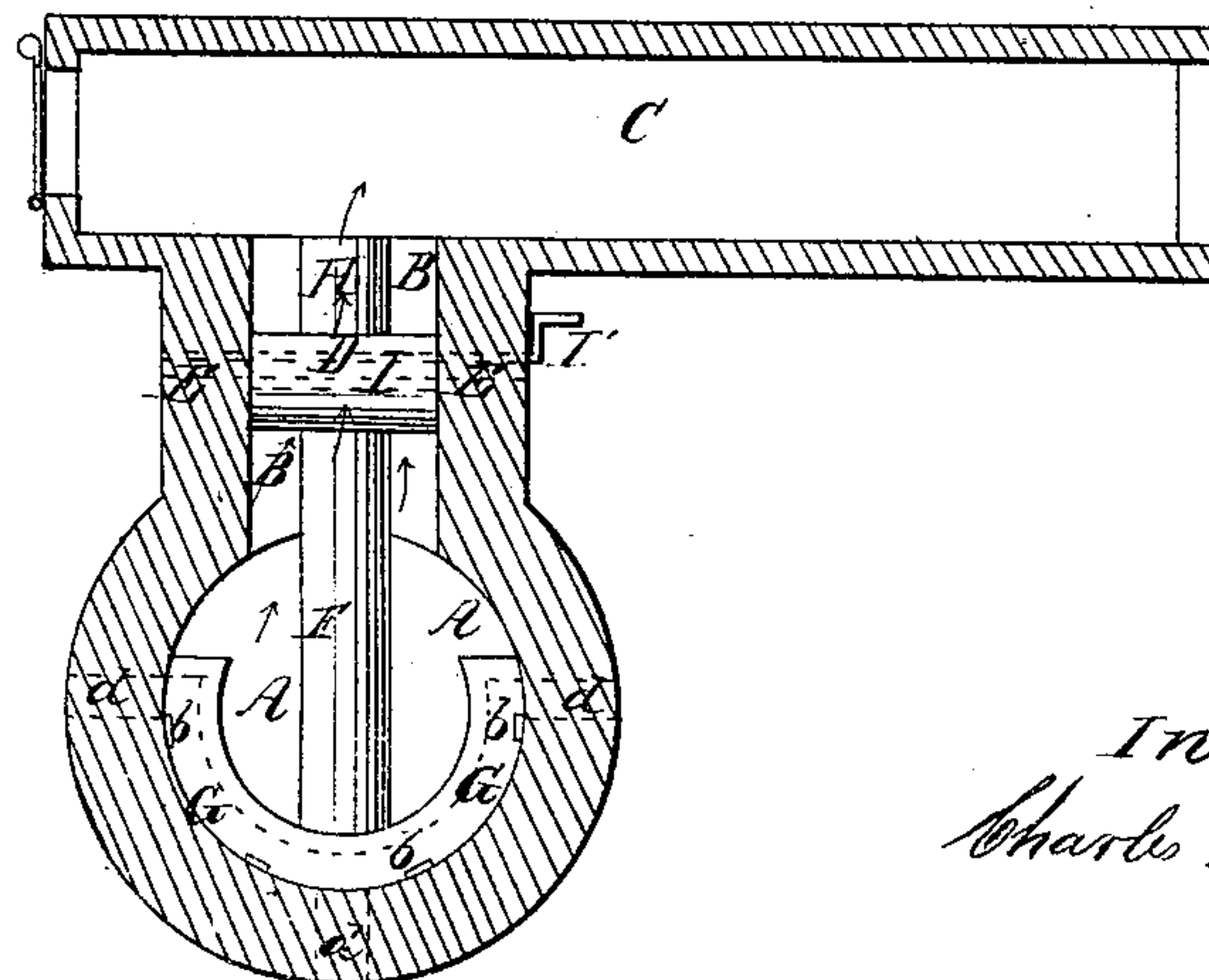


Fig: 3.



Witnesses:

S. A. Dandenne

Alfred H. Clement

Inventor:

Charles A. Desobry

UNITED STATES PATENT OFFICE.

CHARLES A. DESOBRY, OF PLAQUEMINE, LOUISIANA.

BAGASSE-FURNACE.

Specification of Letters Patent No. 25,322, dated September 6, 1859.

To all whom it may concern:

Be it known that I, CHARLES A. DESOBRY, of Plaquemine, in the parish of Iberville and State of Louisiana, have invented certain new and useful Improvements in Furnaces for the Use of Bagasse or other Refuse Matter as Fuel; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification in which—

Figures 1 and 2, are vertical sections, taken at right angles to each other, through the center of the fire-chamber, of a boiler-furnace with my improvements. Fig. 3 is a horizontal section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists in a novel system of air-ducts combined with an air chamber for supplying the fire chamber with the air necessary for combustion and for tempering the heat of the furnace.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, is the fire-chamber of the furnace, having a dome-shaped or arched roof. B, is the outlet from the said chamber to the long flue C, in which are set the boilers J, J, or other apparatus to be heated by the furnace.

D, is an upright air-chamber of brick-work which may be arranged in the outlet B, between the fire-chamber and the flue C, as represented in Figs. 1 and 3, or within the flue C, opposite to the said outlet B. This air-chamber D, may be of cylindrical or conical form, so that the flame and heated gaseous products of combustion may play all around it, as well as over its crown; or it may be in the form of a hollow bridge-wall extending all across the outlet B, as shown in the drawing, in which case the flame and heated gaseous products of combustion will play upon one side over its crown, and down the other side. The said air-chamber has a central partition wall *a*, (Fig. 1) extending all across it from the bottom nearly to the top. On the side of this partition wall that is farthest from the fire-chamber there are two ducts E, E, to admit cold air from outside the furnace to the lower part of the interior of the air-chamber; and on the opposite side of the

said wall there is a straight duct F, leading from the bottom of said chamber right across the hearth or sole *c, c*, Fig. (2) of said chamber into a duct G, which extends more than half way around the fire-chamber, and in the top of which there are several openings *b, b*, for the admission of air into the fire-chamber A. This duct G, is also provided with doors *d, d*, to admit cold air. From the side of the air-chamber D, that is farthest from the fire-chamber A, a duct H, leads with an upward inclination into the flue C, and this duct is fitted with a damper or shutter I, which can be operated by a handle I', outside of the furnace. A single duct may be substituted for the two ducts E, E.

In the operation of this furnace the bagasse or other fuel is spread over the hearth or sole *c, c*. The air to support combustion is mostly admitted through the ducts E, and passes up to the top of the chamber D, over the wall *a*, and down the other side thereof to the bottom of the chamber D, whence it passes along the duct F, to the duct G, and thence is distributed through the openings *b, b*, among the fuel, and in its passage is heated to a high degree and so made to combine more readily with the fuel. More air may also be introduced by the doors *d, d*, to the duct G, and distributed therefrom in a similar manner through the openings *b, b*. The heated gaseous products of combustion pass from the fire-chamber through the passage B, into the flue C, and so heat the chamber D to a high temperature.

When it is desired to cool down the boilers J, J, or other apparatus heated by the furnace, the damper or shutter I, is opened to admit warm air from the chamber E, through the duct H, into the flue C. The air thus admitted, though warm, will soon cool down the boilers or other apparatus, and the admission of warm air is not productive of the injury to the boiler or apparatus or to the masonry of the furnace, that results from the admission of cold air. By adjusting the damper or shutter I, a properly regulated supply of warm air may be admitted through the duct H, to mix with the products of combustion to temper the heat in the flue C.

The distance between the fire-chamber and the flue C, is not material, nor is the position of the chamber D, which may be within the

flue itself and directly under the boilers or other apparatus to be heated. By this system of ducts combined with the air-chamber D, I am enabled to effect so perfect a combustion of bagasse that little or no wood is necessary after the fire is once started.

K, is the throat through which fuel is fed to the fire-chamber A, situated directly over the center of the fire chamber, and made of quadrangular form in its transverse section. K, K, are two plates of angular form, as shown in Fig. 1, fitted within the said throat and furnished at their angles with journals or pivots *e, e*, upon which they are capable of turning or swinging from one to the other of the two positions represented in black and red outline in Fig. 1. L, L, are weighted arms attached to the said plates in such a manner as to exert a tendency to keep them in the position shown in black outline in Fig. 1, in which position their lower edges meet and close the throat as shown in that figure.

F, F, are stops for the upper part of the plates to fall against on their arrival in the last mentioned position to prevent their being strained by the sudden fall of the weighted arms. The plates K', K', when in the position shown in black in Fig. 1, combine with the throat K, to form a close-bot-

tomed hopper and so prevent any escape of heat from the throat. The said plates remain in this condition during the filling-up of the hopper till the weight of the fuel in the hopper is sufficient to overcome the weight of the arms L, L, and then the plates are suddenly caused to assume the position shown in red outline and discharge the contents of the hopper into the fire chamber, still keeping the lower throat closed by the meeting of their upper edges; but this position is only momentary, for so soon as the plates are relieved of the weight of the fuel, the arms throw them back to the position in black. In this way scarcely any heat is lost in feeding in the fuel.

What I claim as my invention and desire to secure by Letters-Patent is:—

The combination of the upright air-chamber D, having a vertical partition wall *a*, and the system of ducts E, E, F, G, and H, and the damper or shutter I; the whole applied in connection with the fire-chamber and the flue C, or its equivalent, substantially as herein described.

CHARLES A. DESOBRY.

Witnesses:

I. A. DARDENNE,
ALFRED H. CLEMENT.