# Jones & Charpentier,

## Steam-Boiler Furnace.

No. 30,477. Patented Oct. 23, 1860.

Fig: 3.

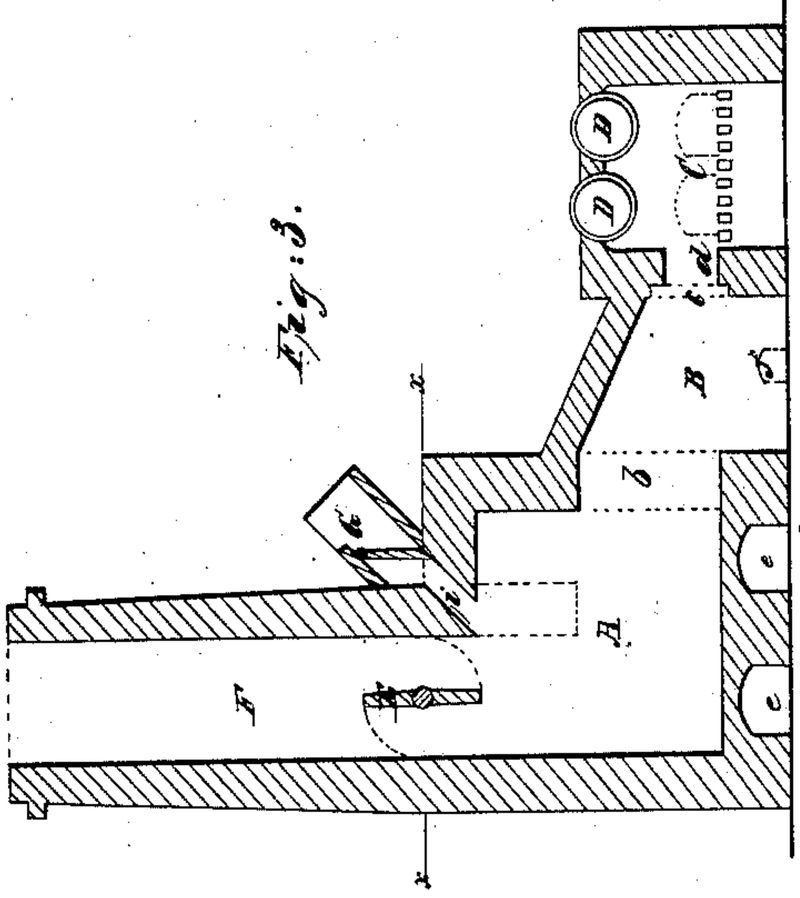


Fig: 2.

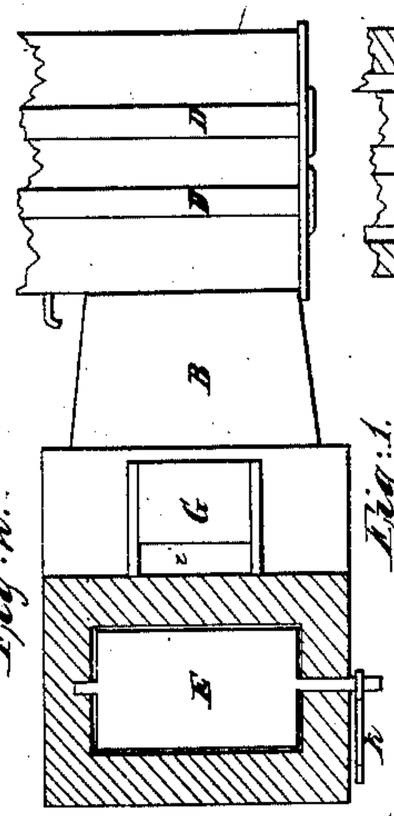


Fig: 1.

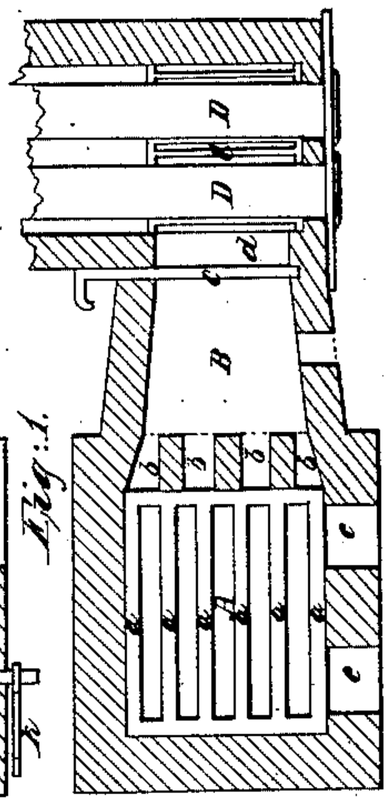
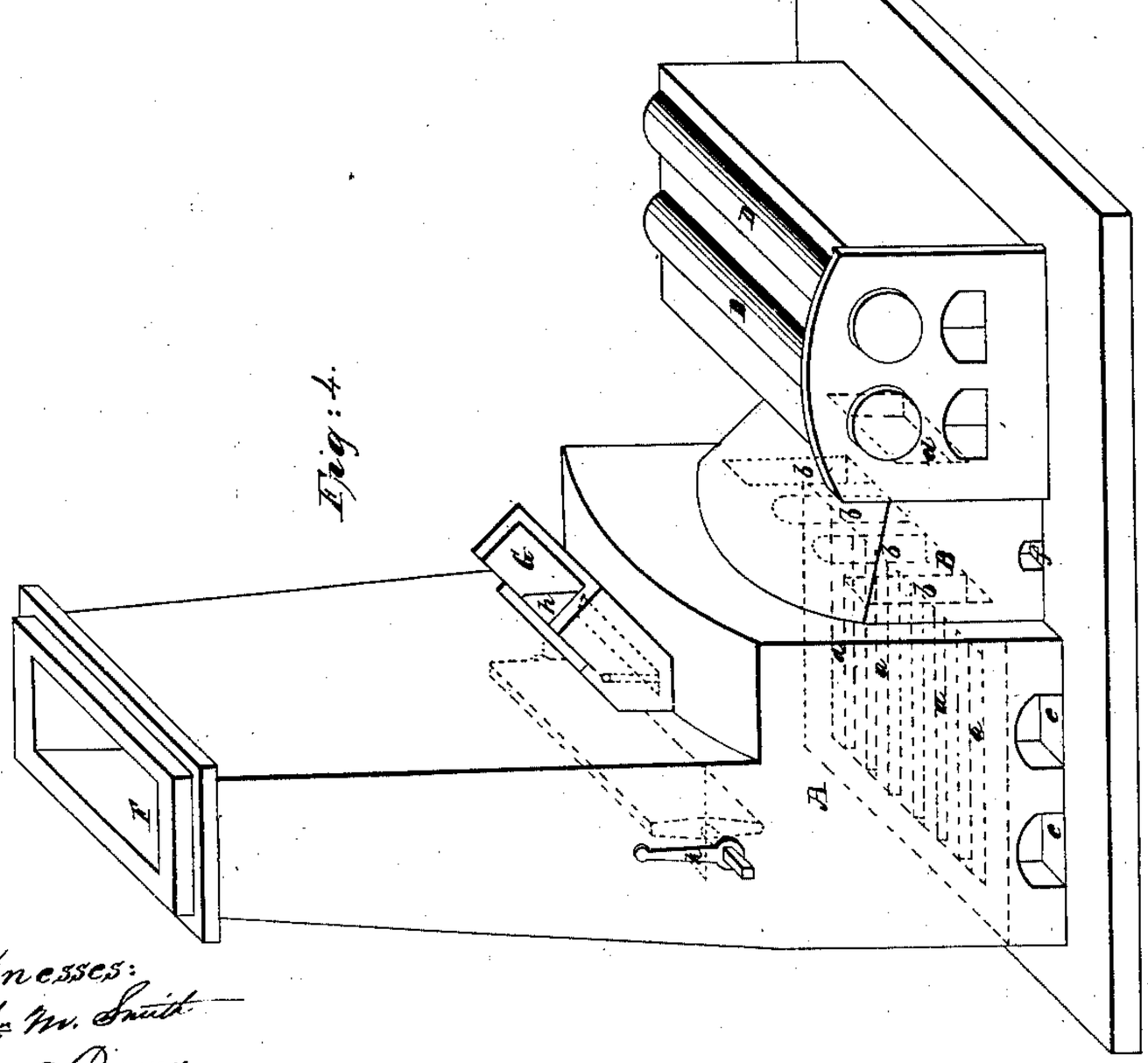


Fig: 4.



Witnesses:
Wash^n Nv. Smith
Armand Duzuy

Inventors:
John. M. Jones
Joseph M. Charpentier

# UNITED STATES PATENT OFFICE.

J. M. JONES, OF NEW ORLEANS, AND J. M. CHARPANTIER, OF PATTERSONVILLE, LOUISIANA.

## BAGASSE-FURNACE.

Specification of Letters Patent No. 30,477, dated October 23, 1860.

*To all whom it may concern:*

Be it known that we, JOHN M. JONES, of New Orleans, parish of Orleans, and State of Louisiana, and JOSEPH M. CHARPANTIER, of Pattersonville, parish of St. Mary, and State of Louisiana, have invented a new and useful Improvement in Furnaces for Burning Bagasse; and we 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 order that the object and nature of our invention may be fully understood, we will before describing it fully, refer as briefly as possible to the modes now used for burning bagasse, and explain their defects.

In all the arrangements of furnaces for burning bagasse, the same general features are observed; the furnace consists of a chamber, rectangular or circular in form, closed at the top by a dome, in the apex of which is fixed the apparatus for feeding the furnace with the bagasse as it comes from the mill.

This apparatus consists of a hopper, and a door that opens by the weight of the bagasse, and closes again, preventing the escape of smoke or heat at the top of the furnace.

A large chamber or flue connects the furnace, with the flue under the boilers or other vessels under which the heat from the bagasse is to be conveyed and utilized; either for the purpose of evaporating the cane juice in kettles or generating steam in boilers.

Owing to the peculiar nature of bagasse as a fuel and to obtain useful results from its combustion, it has to be accumulated in large quantities in the furnace, in fact, in such quantity that when the usual supply from the mill is suspended, either from a want of canes to grind, accidents to the machinery, or to the cessation for a few hours of the process of sugar making, there yet remains bagasse enough in the furnace at such times as to afford useful results from its combustion for a period of from 8 to 12 hours before it is all consumed. In such cases owing to the construction of the ordinary bagasse furnace, no provision is made whereby the heat from the bagasse, in the intervals referred to, can be diverted from under the boilers or kettles; in consequence it becomes necessary to keep the engine or pumps in motion to furnish the boilers with water, necessitating a useless wear and tear of the machinery, in so doing, as well as the danger and constant annoyance of blowing off the excess of steam generated in the boilers; otherwise the destruction of the boilers or kettles by the intense heat under them.

It has been attempted to obviate the difficulty by providing a damper to the flue under the boilers whereby to cut off the passage of the heat from the bagasse furnace from under them, but this is only a partial remedy, for when this flue is closed, the heat and gases generated in the furnace having no other exit than by the flue under the boilers, cause the destruction of the walls of the furnace, either by cracking or throwing them down altogether, scattering the contents of the furnace and often endangering the destruction of the buildings by fire.

The nature of our invention consists in adapting an ordinary bagasse chimney (which has heretofore been used only for burning bagasse as a waste) to the double purpose of burning bagasse as a waste and as a fuel for heating steam boilers, by providing a damper in the chimney just above the feed opening and extending the base of the chimney horizontally in the form of an arch, said arch having two diameters, (and connecting the extended portion of the chimney to the walls of the boiler furnace) and having the same communicate with the boiler flues by means of a valved passage.

By our invention, it will be seen that the escape for the products of combustion is full and complete, both when the chimney is used for burning bagasse as a waste, and as a fuel for raising steam, for in the first case the whole chimney flue is employed as the escape, and in the latter case the chimney flue of the boiler furnace; and in either case no inconvenience from one escape interfering with the other is experienced, for when the valve of the boiler flue is closed and the valve of the chimney is opened, the passage of the flame into the boiler flue is prevented, and when the valve of the boiler flues is opened, and the valve of the chimney flue closed, the escape of the products of combustion out through the chimney is prevented.

Our invention avoids the use of side relief flues which are imperfect in their operation; it also avoids the necessity of using anything more than the ordinary bagasse burning chimney in connection with the boiler furnace, and thus saves a considerable portion

of the expense usually incurred in erecting closed top bagasse furnaces for the same purpose.

Figure 1 is a ground plan showing the arrangement of the furnace and the boilers; Fig. 2, a top view of the same, on line *x*, *x*, of the sectional elevation; Fig. 3, a sectional elevation of the furnace and boilers; Fig. 4, a perspective view.

Similar letters of reference indicate corresponding parts on all the drawings.

A, is the furnace in which the bagasse is consumed; B, is a large chamber or flue between the furnace A, and the boilers, D, D; C, the flue under the boilers D, D provided with the ordinary fire grates and feeding doors; D, D, the steam boilers; E, a damper, inside the flue F, operated by the lever *k*, on the outside of the flue; F, flue for the waste heat; G, the bagasse slide or hopper; *a*, *a*, *a*, *a*, furnace bars or gratings upon which the bagasse is burned; *b*, *b*, *b*, *b*, flues connecting the furnace A, with the chamber or flue B; *c*, damper, for cutting off the communication between the flues B, and C; *d*, flue opening, between B, and C; *e*, *e*, fire doors, for firing under the bagasse on grates *a*, *a*, *a*, *a*; *f*, door, for cleaning out the ashes in flue B; *h*, door, in hopper G; *i*, opening, for conveying the bagasse into the furnace A; *k*, lever, for operating the damper E.

The operation of the furnace is as follows: The flue opening *d*, between the chamber or flue B, and C, being closed by the damper *c*, steam is generated in the boilers D, D, by firing under them with wood or coal in the ordinary manner in the furnace in flue C. When steam is generated in the boilers D, D, sufficient to propel the machinery, the grinding of the canes begin; the crushed canes or bagasse as it is made being fed continuously through the hopper G, hinged door *h*, and opening *i*, into the furnace A, falls upon the grating *a*, *a*, *a*, *a*. When a sufficient quantity of the bagasse is fed into the furnace, a fire is started under the gratings *a*, *a*, *a*, *a*, through the fire doors or openings, *e*, *e*, which ignites the bagasse in the furnace A; the damper E, in flue F, operated by the lever *k*, is turned into a vertical position as represented in Fig. 3, which permits the products of combustion to pass off into the waste flue F, until such time as it may be desired to utilize them, by passing them under the boilers D, D. In this case the firing of the furnace C, under the boilers D, D, is discontinued; the flue opening *d*, between the chamber or flue B, and C, under the boilers D, D, having the damper *c*, withdrawn, and the damper E, in flue F, turned into a horizontal position as represented in Fig. 2, effectually closes or cuts off the flue F, from the furnace A; the heated gases and other products of combustion from the bagasse now pass from the furnace A, through flues *b*, *b*, *b*, *b*, into the large chamber or flue B, and through the flue opening *d*, into the flue C, giving up their heat to the boilers D, D, on their passage to the waste chimney at the other end of the boilers (not shown in the drawings).

When it is desired to discontinue the grinding of the canes, or to discontinue the process of sugar making for a few hours, or from accidents to the machinery which would make a stoppage necessary, the further generation of steam in the boilers D, D can be suspended at pleasure, by closing the damper *c*, in the flue opening *d*, and opening damper E, in flue F, thereby diverting the intense heat generated in the furnace from under the boilers D, D, and isolating the boilers from the further heat of the furnace and permitting the combustion of the bagasse in the furnace A to proceed, and the heat therefrom to be wasted through the flue F, until it is entirely consumed, without endangering the stability of the furnace, or generating steam to no useful purpose.

It will be observed that by this improvement, we effectually obviate the imperfections and objections attending the working of the ordinary bagasse furnace; it being optional to use our improvement, either as a furnace for the purpose of merely consuming the bagasse to get rid of it as a waste, wholly, or at intervals, in this manner; or to use it as a bagasse furnace and utilize the products of combustion by passing them under boilers for generating steam or under kettles for evaporating cane juice.

What we claim as our invention and desire to secure by Letters Patent, is—

The combination and arrangement of the chimney F, with bagasse burning chamber A, at its base, horizontal arch B, boiler furnace *c*, *d*, and dampers E, *c*, substantially in the manner and for the purposes set forth.

JOHN M. JONES.
JOSEPH M. CHARPANTIER.

Witnesses:
WASHN. M. SMITH,
ARMAND DUZUY.