G. M. Longacre,

Steam-Boiler Furnace.

No. 17,842. Patented July 21, 1857.

Fig. 1.

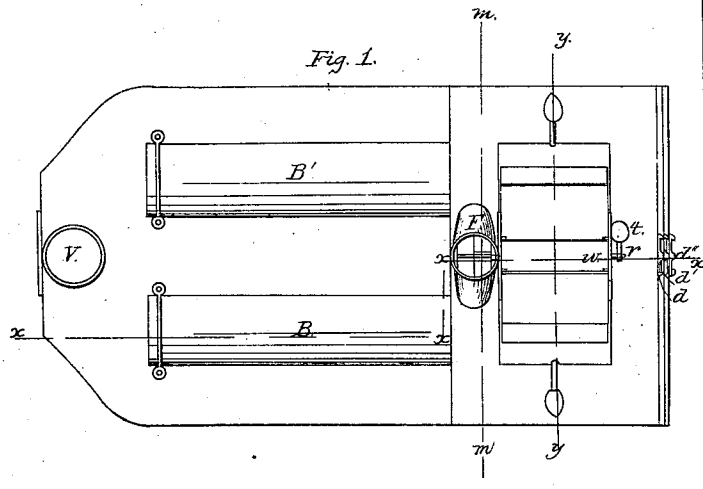


Fig. 4.

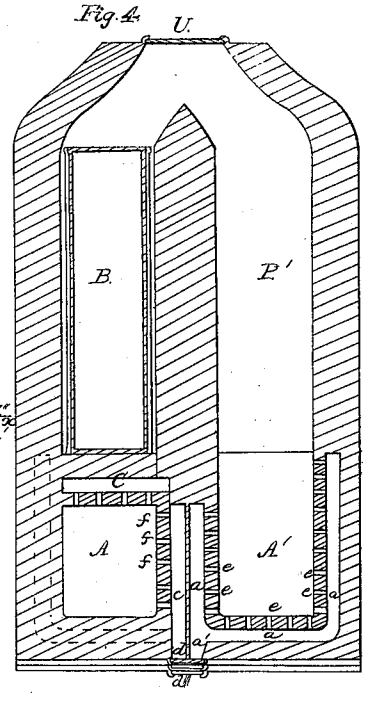


Fig. 6.

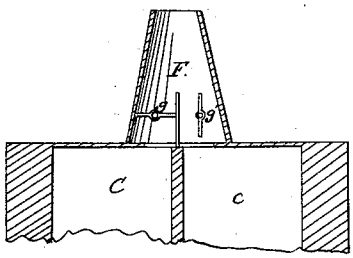
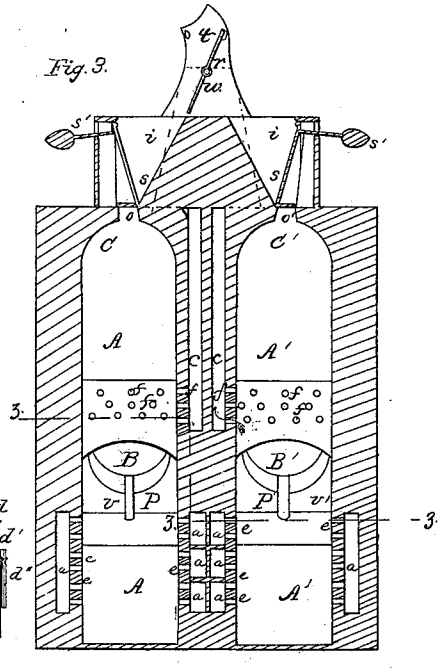


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

GEO. M. LONGACRE, OF NEW ORLEANS, LOUISIANA.

BAGASSE-FURNACE.

Specification of Letters Patent No. 17,842, dated July 21, 1857.

To all whom it may concern:

Be it known that I, GEORGE M. LONGACRE, of the city of New Orleans, parish of Orleans, State of Louisiana, have made a new and useful Improvement in Bagasse-Furnaces; and I hereby declare the following is a full and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon, making a part of this specification, the same letters made use of to designate the same parts shown in the different views.

The object of this invention is to secure the escaping from the furnace of the evaporated moisture retained in the bagasse, as it comes from the sugar mill, this evaporation being the drying process preparatory to rendering this kind of fuel useful. In other furnaces for burning bagasse, the vapor has to pass from the furnace through the same channel as the heated gas from combustion. Therefore the heating of this vapor by the gas, is causing a reduction of temperature of the gas, and in the same ratio produces a less value in heating power, when applied to the purposes required. To obviate this described disadvantage, I construct the furnaces with ventilators to admit the vapor to pass from the furnace and escape out of the top of the same. The ventilators have their openings in the interior of the furnace and above the mass of bagasse within to secure a free passage of the vapor to leave the furnace soon as formed independent of the action of the common chimney. I construct the furnace to show, and in reality is, two distinct furnaces, separated by a division wall the entire length of the furnaces, and also with two boilers having two hoppers to admit the bagasse into the furnaces; also separate furnace doors and separate air chambers to admit the air to support the combustion, separate ventilators to allow the vapor to pass out, with separate valves to close or open the ventilators for each furnace, as the circumstances may require, and concentrate the ventilators into one tube or chimney above the valves of the same. I have dampers placed in the canal leading from the furnace to the chimney to suspend the draft of the chimney as required during the time the furnace is being charged with bagasse, and allow the drying to go on, the furnace thus being charged having the furnace doors closed and suspend the admission of the air at the same time, making it under these circumstances an air tight furnace, excepting that the ventilators are open to allow the vapor to rise and pass out through the described passage. The other furnace having the bagasse already dried by the same operation that this is supposed to be in, the combustion is going on, the air is admitted for this purpose, the damper in the canal to the chimney opened, and the valves of its ventilator shut to prevent any sparks, smoke or other products of combustion escaping through.

After this my general description I will refer to the drawings to render the subject more definite.

Figure 1 is a top view of the furnace. Fig. 2 is a vertical section, taken on lines *x x* and *x' x'* of Fig. 1. Fig. 3 is a vertical section on line *y y* of Fig. 1, and line *y' y'* of Fig. 2. Fig. 4 is a horizontal section taken on lines *z z* and *z' z'* of Fig. 3, showing the draft openings of one chamber and ventilating openings of the other. Fig. 5 is a vertical section on *m m* of Fig. 1, showing valves in ventilating channel.

A and A' are the combustion chambers, into which the bagasse passes through the openings *o o'* in the crowns of arches C C'. The draft of these chambers is regulated by the doors *d d' d''*, air passing through channels *a'* into the spaces *a* around the chambers and entering the said chambers by openings designated by letters *e*, which in practice are the interstices of the bricks composing the wall. The products of combustion are carried along the passages P P' under the boilers B B', and uniting at U pass out of the flue V. The passages P P have cut off dampers *v v'*. The upper portion of the combustion chambers have outlets *f* to the spaces *c* leading to the ventilator F, for the passage of the moisture arising from the heated bagasse.

g g' are valves in the ventilator by which it can be opened or closed as desired.

s s are swinging doors kept closed by weights *s' s'*, and yielding to the weight of bagasse as it enters the hoppers *i*. Above the hoppers between the cheeks *t*, is a swinging table *w*, on the shaft *r* of which is an arm having on its extremity a weight *t'*. This table will by turning upon its shaft bring either hopper in communication with the carrier; so as to feed either chamber of combustion when desired.

The draft doors *d d' d''* are shown in the

drawing as each regulating both chambers, though in practice there would be a separate set for each chamber.

The furnace chamber A being supposed to be in full operation, the valve *g* in the ventilator F will be closed, and the damper *v* under boiler B will be open. Meantime chamber A′ having been charged with moist bagasse, damper *v′* will be closed and the draft openings of this chamber also shut off. Valve *g′* will be open and will carry off the evaporated moisture of the bagasse, and by this drying bring it to a condition favorable to combustion. So that when the contents of chamber A have been consumed, damper *v′* will be opened, valve *g′* closed and the draft openings in the front of the furnace opened; while chamber A will receive a fresh supply of bagasse, which will be dried as described for chamber A′.

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

The construction of bagasse furnaces with a space *c* around and communicating with the upper portion of the fuel chamber, substantially as described, and leading to an exit flue F, regulated by a damper; when said parts are additional to the ordinary channels for the passage of the products of combustion, the operation being substantially as, and for the purposes specified.

GEO. M. LONGACRE.

Signed in presence of—
P. N. STRONG,
FRANCIS ARMSTRONG.