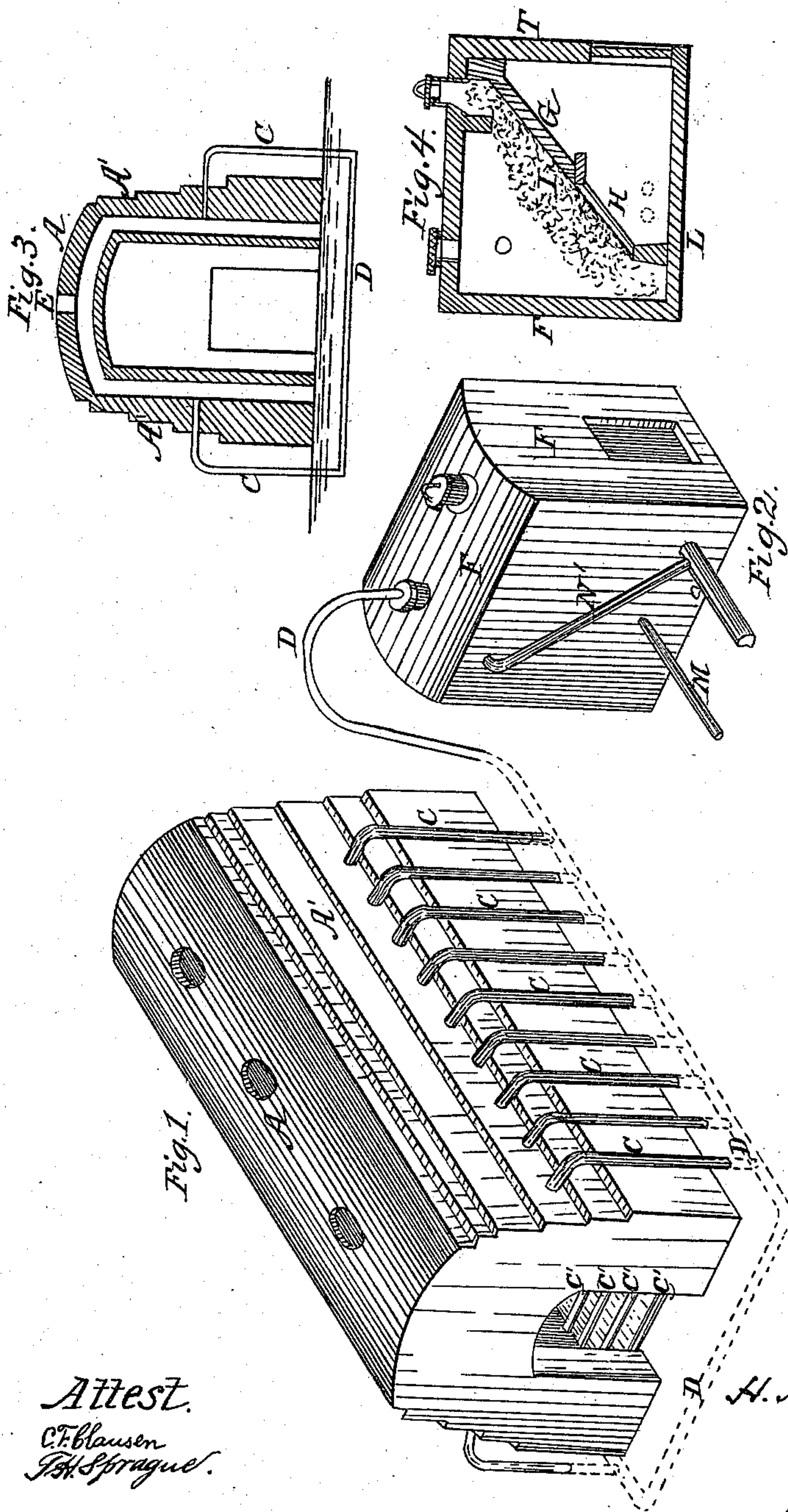


AIKEN, McALLISTER & MORRIS.

Brick Kiln.

No. 87,455.

Patented March 2, 1869.



Attest.
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HENRY AIKEN, OF PITTSBURG, AND HENRY M ALLISTER, JR., AND
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Letters Patent No. 87,455, dated March 2, 1869

IMPROVED BURNING-KILN FOR BRICK, TILES, &c.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, HENRY AIKEN, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, HENRY McALLISTER, Jr., of Philadelphia, in the State of Pennsylvania, and HENRY G. MORRIS, of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Kilns for Burning Brick, Tile, and Earthenware; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a perspective view of the kiln;

Figure 2, a perspective view of the gas-manufacturing apparatus;

Figure 3, a vertical section across the kiln; and

Figure 4 is a similar section of the gas-apparatus.

The same letters in the several figures are used to indicate corresponding parts.

Our improvements relate to kilns, or ovens, such as are used for burning bricks, tile, or earthenware; and

Our invention consists in so constructing such kilns, or ovens, that gas made outside of the said kilns, or ovens, being introduced thereto under pressure, may be used for heating the same, thereby producing a uniform temperature throughout such kilns, or ovens.

Combustion is, we are aware, caused by the ignition of gases evolved by the destructive distillation of such substances as coal and wood. We also are aware that there is great loss in the ordinary modes of burning fuels; and in brick-kilns, as ordinarily constructed, there is not only great waste of the heat, but it is so unequally applied, that many of the bricks are spoiled, by being overburned, while in other parts of the kiln they are not sufficiently burned.

Our object is to prevent this waste of heat, and to insure the uniform burning of the brick, tile, or earthenware exposed to its action.

These objects we accomplish by generating the gases in an apparatus separate from the kiln, or oven, and causing them to be burned, after being forced into the latter through conduits suitably arranged for the purpose. To this end, the kiln, or oven, should be made close, with no other openings except such as are necessary for the admission of such gases, and for the escape of the carbonic-acid gas produced by the combustion of the inflammable gases.

The gases, thus forced into a kiln, or oven, will fill every part of the combustion-chamber, and, being properly mingled with oxygen, supplied by atmospheric air or the decomposition of water, will surround articles placed in such chamber with flame, and cause them to be uniformly heated.

It will be apparent at once that the form of the combustion-chamber, and also of the gas-generating apparatus, may be almost indefinitely varied, and while we do not limit our claim to any peculiar form, we will set forth one which we believe to be good.

A is a kiln suitable for burning brick, &c.

It is constructed with two walls, A' and B.

The inner wall, B, is built within the external wall, A', leaving an air-passage between the two.

Through these walls a door, or doors, are formed, which may be tightly closed after the bricks or other articles have been placed within the combustion-chamber, said articles being so arranged as to leave between them spaces for the free circulation of the gases.

The gas is introduced through a series of pipes, O and O', connected with a main pipe, D, leading from the generator, and opening within the combustion-chamber, where they are to be ignited.

These gases will fill the combustion-chamber with flame, and the pressure applied to the gases in the generator will be sufficient to force the carbonic-acid or other non-inflammable gases, through openings at the bottom of the internal wall B, upward between the two walls, and into the open air, through the openings at E.

The gas-generator is shown at F.

It is an enclosed furnace, divided into two parts by the diagonal partition G, and grate H, on which the fuel lies, as shown at I, fig. 4.

The fuel may be introduced through a door at K.

L is the ash-pit, through which the non-combustible residuum of the fuel may be withdrawn.

M is a pipe, through which a jet of steam may be forced into the chamber below the grate, and

N is an air-pipe, through which a current of air may be forced from a pressure blast.

This pipe opens below the grate, and a branch-pipe, N', therefrom, opens into the chamber above the fuel.

Coal, wood, sawdust, tan-bark, or other suitable substances, may be used as fuel.

The furnace is air-tight, and no draught is permitted, except such as is supplied by the pressure-blast.

The gases evolved by the distillation of the fuel will be forced, by the pressure of the blast, through the pipe D, into the combustion-chamber D, and the amount of this pressure may be regulated according to circumstances.

In using this kiln for burning brick, we propose to put, in the bottom of the kiln, say, eight rows of brick, and at night to light the jets from a series of pipes, O', placed in the bottom of the kiln, using this heat simply for the purpose of drying the brick.

For this purpose it is not necessary to use the pressure-blast, as the draught through the open pipes N will be sufficient to maintain the necessary combustion of the fuel.

The next day, another course of, say, eight rows will be again added to the pile in the kiln, and so on, drying each day's work until the kiln is filled, when the pressure-blast must be applied, and the doors of the combustion-chamber kept closed.

The water, as evaporated from the brick in burning

them, will, by the great heat, be decomposed, and its gaseous elements add, by their combustion, to the maintenance of a high and uniform heat in the combustion-chamber.

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

The kiln A, with its double walls A' B, and system of induction-pipes C C' D, in combination with an independent gas-generator, F, and pipes N N', connected with a pressure-blast, for introducing the mingled gases

and air into the kiln, for combustion under pressure, substantially as herein set forth.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

HENRY AIKEN.

HENRY McALLISTER, JR.

HENRY G. MORRIS.

Witnesses:

J. P. DELANEY,

ROBERT P. CARROLL.