

W. H. BRUSH.
BRICK-KILNS.

No. 194,987.

Patented Sept. 11, 1877.

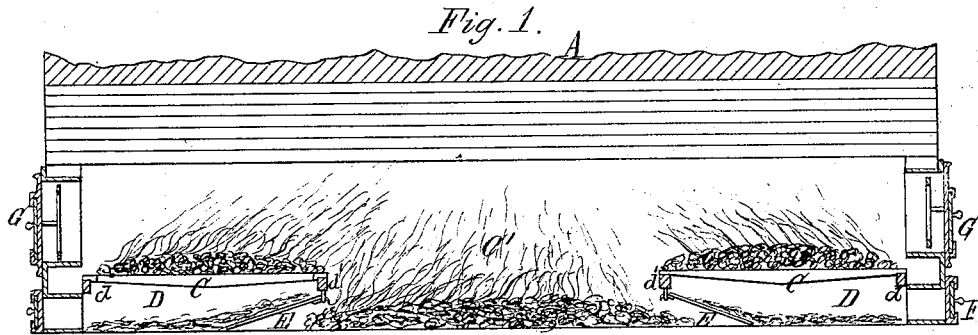
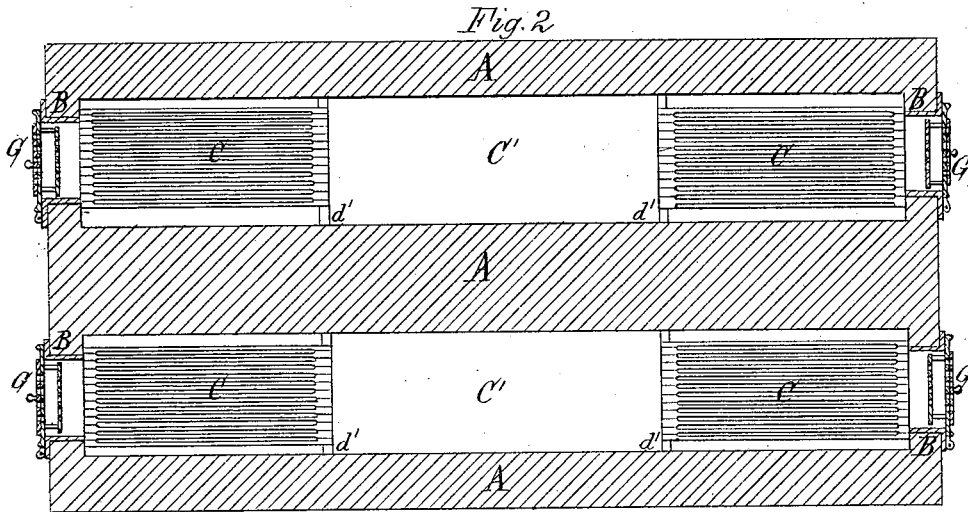


Fig. 3.

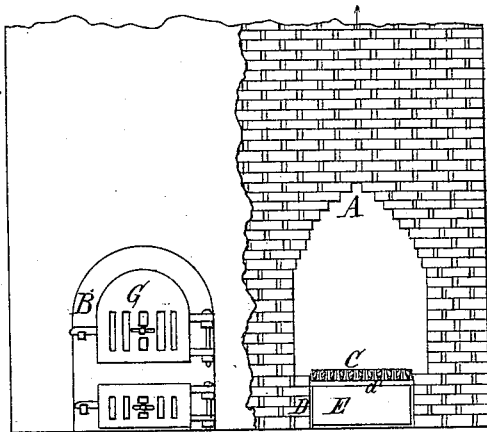


Fig. 4.

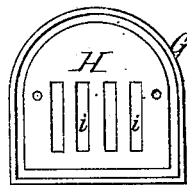
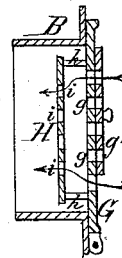


Fig. 5.



George H. Spikes
Chas. J. Buchheit } Witnesses

William H. Brush, Inventor
by Edward Wilhelm
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM H. BRUSH, OF BUFFALO, NEW YORK.

IMPROVEMENT IN BRICK-KILNS.

Specification forming part of Letters Patent No. **194,987**, dated September 11, 1877; application filed July 6, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. BRUSH, of the city of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Brick-Kilns, which improvements are fully set forth in the following specification, reference being had to the accompanying drawing.

My invention relates more particularly to temporary brick-kilns, which are set up wherever the green bricks are required to be burned, as contradistinguished from permanent kilns, which are stationary structures, and provided with fixed furnaces of various constructions.

Heretofore the fuel in temporary brick-kilns has been placed within the arches either directly upon the ground, when wood is used, or upon grates extending through the entire length of the arches. This mode of firing is objectionable, for the reason that it is impossible to regulate the fire so as to produce brick of uniform color and strength.

My invention consists, first, in arranging two fire-grates within each arch, one near each end thereof, leaving an intermediate space for fuel to be placed directly on the ground, so that the combustion of the fuel in the space between the grates can be regulated by the fire upon the latter, and air-currents above and below the same, as will be more fully set forth; second, in arranging a hinged apron on the under side of each grate for the purpose of preventing the cold air from entering the arch, and permitting access to the fuel in the space between the grates when required; third, in the combination of the grates, fuel-space, hinged aprons, and fire-doors, provided with deflecting-plates, whereby the fires are perfectly controlled and readily directed to any portion of the arch without admitting cold air into the latter.

In the accompanying drawing, Figure 1 is a sectional elevation, showing an arch of a brick-kiln provided with my improvements. Fig. 2 is a plan view of two arches. Fig. 3 is a front view, showing one arch in front elevation, and one in cross-section. Fig. 4 is a rear view, and Fig. 5 a horizontal section, of the fire-door.

Like letters of reference designate like parts in each of the figures.

A represents the arch of green bricks set up in the usual manner. B are the frames of the fire-doors, arranged in the outer walls of each arch in the ordinary manner. C is a fire-grate, preferably about five feet in length, arranged within each arch at each end thereof, as clearly shown in the drawing. The grates C are supported upon bars *d d'* resting upon the bricks of the ash-pit D, which latter is preferably composed of old or burned bricks. E is an inclined plate or apron hinged or hung to the rear grate-bar *d'*, as clearly represented in the drawings, and made of the same width as the ash-pit, so as to prevent the cold air in the ash-pit from entering the arch, except through the burning fuel upon the grate C. The aprons E incline toward the ash-pit door F, so as to cause the ashes and cinders dropping upon the aprons to slide forward toward the ash-pit door, and the hinging of the aprons to the grate-bars enables the front ends of the aprons to be raised, so as to permit access to the fuel placed upon the ground between the grates C C.

G is the fire-door hinged to the frame B, and provided with vertical slots or openings *g*, which are opened and closed by a sliding plate, *g'*, in the manner of an ordinary register.

H is a protecting-plate, arranged on the inner side of the fire-door G, and connected thereto by stay-bolts *h* in the usual manner. *i* are vertical slots or openings, arranged in the plate H in such manner that solid portions of the plate H are opposite the openings *g* of the fire-door G, and the openings *i* opposite the solid portions of the fire-door. This construction of the protecting-plate H causes the air-currents entering through the openings *g* of the fire-door to impinge against the solid portion of the plate H, which, being kept at a very high temperature by the fire upon the grate, heats the air before it enters the arch, thereby preventing the bricks from becoming checked.

The grates C may be charged with wood or coal, and the space C' between the grates is preferably charged with wood or coke. By admitting a strong air-current through the fire-doors G the flame and hot gases are driven from the grates C toward the center of the kiln and the combustion of the fuel between

the grates is accelerated. Upon closing the damper in the fire-door G the hot gases from the grates C rise perpendicularly through the arch, and the combustion of the fuel between the grates is retarded. Upon raising the ends of the aprons E the ashes can be raked out from the space between the grates, and new fuel can be supplied thereto without interfering with the fuel upon the grates, while, by supporting the front ends of the aprons in a greater or less elevated position, the combustion of the fuel in the space between the grates can be regulated without affecting the combustion of the fuel upon the grates.

It is obvious from the foregoing that my improvements, which are readily and cheaply applied to kilns of ordinary construction, give a perfect control over the fire in all parts of the arch, thereby enabling the bricks to be burned to a uniform color and strength, and preventing loss from checked bricks. The entire fire-surface being arranged within the arch the heat developed by the fuel is fully utilized, and loss by radiation to a great extent prevented.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the arch of a brick-kiln, of the grates C C, arranged within the arch near the ends thereof, and an intermediate fuel-space C' arranged below the plane of the grates C C, and made accessible from the outside by the means described, so that the combustion of the fuel in the space C' can be regulated either by means of air-currents admitted to the fires upon the grates C C or independent of the grate-fires, substantially as set forth.

2. In a brick-kiln, the combination, with the grates C C and intermediate fuel-space C' arranged below the plane of the grates C C, of the hinged aprons E, arranged under the rear portion of the grates, substantially as and for the purpose hereinbefore set forth.

3. In a brick-kiln, the combination, with the grates C C and intermediate fuel-space C', of the hinged aprons E and the fire-doors G, provided with openings g and slotted deflecting-plates H, substantially as and for the purpose hereinbefore set forth.

WM. H. BRUSH.

Witnesses:

CHRIST. GEYER,
EDWARD WILHELM.