(No Model.) 2 Sheets—Sheet 1.

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REVERSIBLE DRAFT BRICK KILN.

No. 504,998. Patented Sept. 12, 1893.

Fig. 1.

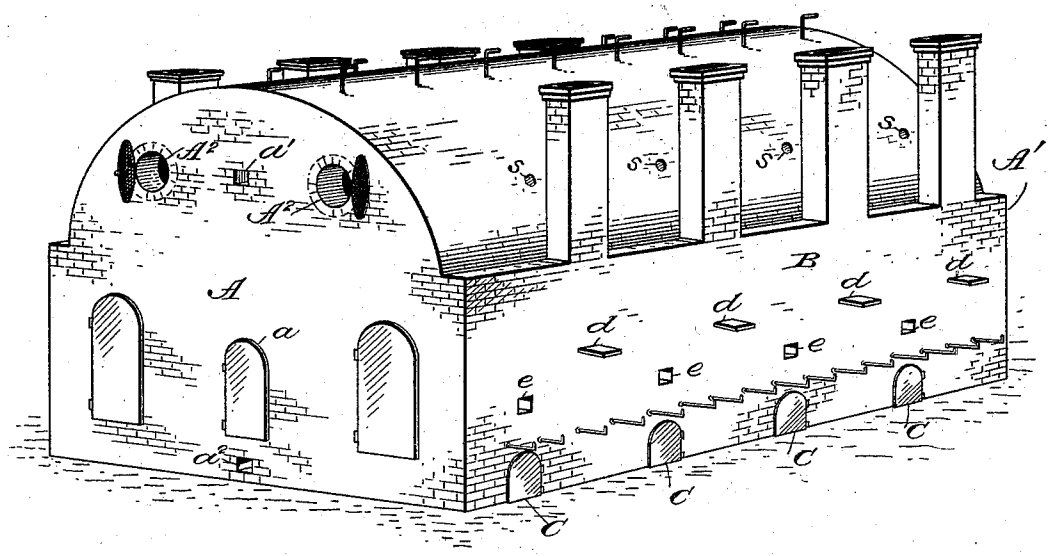

Fig. 2.

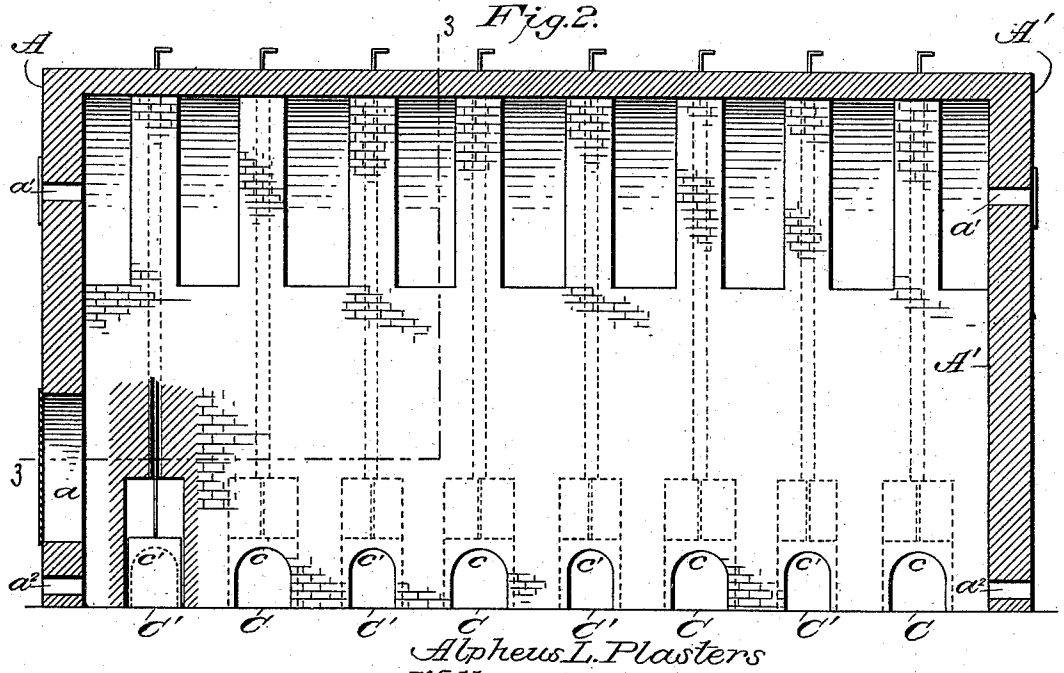

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Fig. 3.

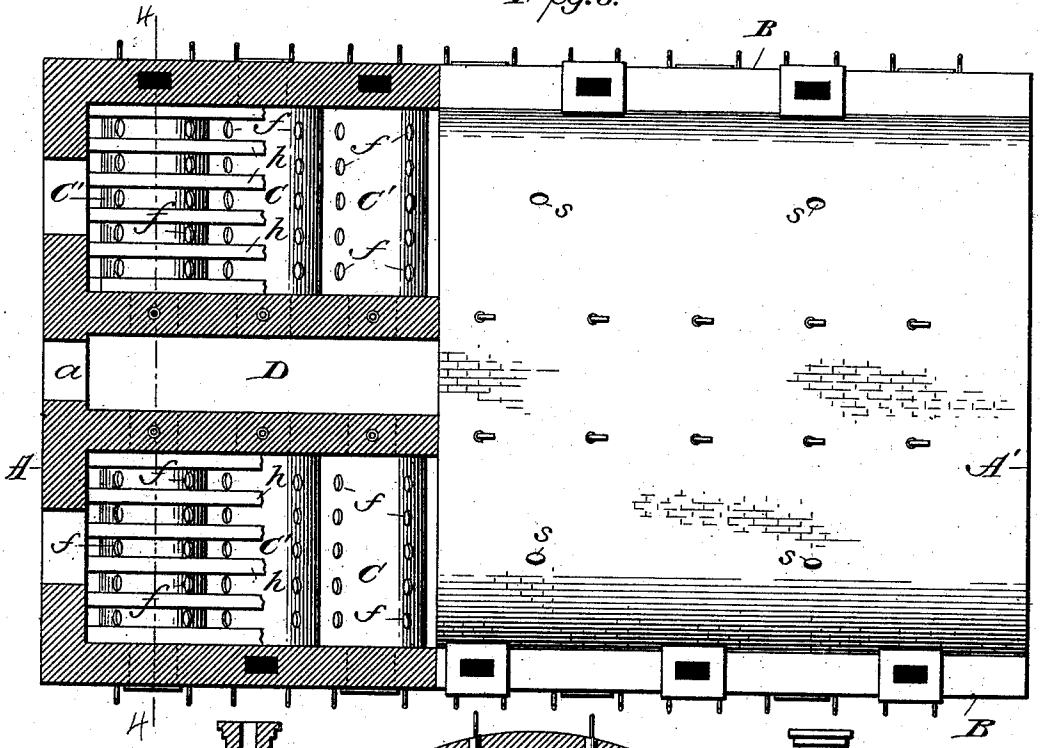

Fig. 4.

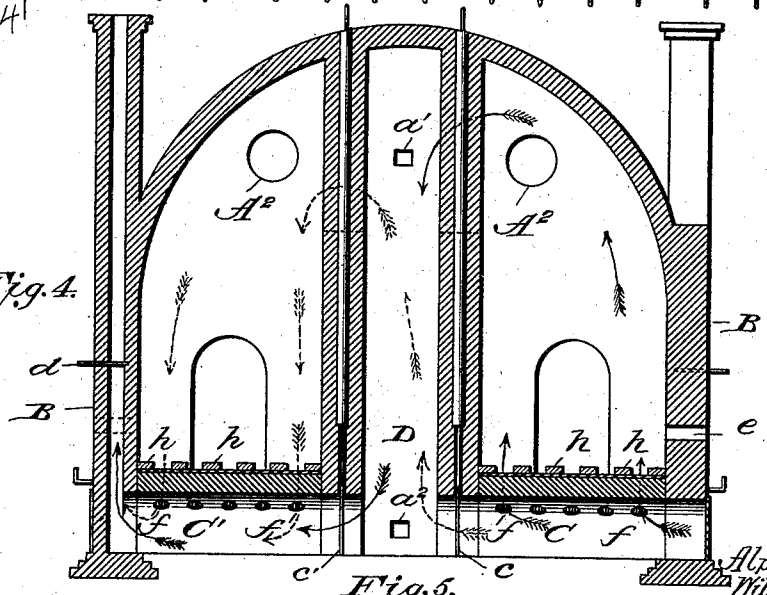

Fig. 5.

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REVERSIBLE-DRAFT BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 504,998, dated September 12, 1893.

Application filed April 13, 1893. Serial No. 470,246. (No model.)

To all whom it may concern:

Be it known that we, ALPHEUS L. PLASTERS, WILLIAM F. RANKIN, and JAMES M. WOLFE, citizens of the United States of America, residing at Tarkio, in the county of Atchison and State of Missouri, have invented certain new and useful Improvements in Brick-Kilns; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a kiln of improved construction in which an up or a down draft can be passed through the articles to be burned, as the direction of the heat or products of combustion from the furnaces to the chimneys may be changed by the proper manipulation of the dampers.

The invention consists in the construction and combination of the parts, as will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view showing the exterior of a kiln constructed in accordance with our invention. Fig. 2 is a longitudinal vertical sectional view. Fig. 3 is a plan view partly in section, the section being taken on the line 3—3 of Fig. 2. Fig. 4 is a transverse section on the line 4—4 of Fig. 3. Fig. 5 is a sectional view through one of the furnaces and horizontal flues.

A and A′ designate the end walls of the kiln, which are similar in construction with the exception that the front wall, A, has a doorway, *a*, through which access can be had to the central combustion chamber.

B B designate the side walls, which are provided at about the ground level with door ways which lead into a series of furnaces built within the kiln, said furnaces, C, being located on each side of the central combustion chamber D and alternating with the horizontal flues C′ in such a manner that the horizontal flues on one side of the combustion chamber will be directly opposite the furnaces on the other side of said combustion chamber. The furnaces and flues are built alike, being arched over as shown in Fig. 5, and both connect with the central combustion chamber D, as shown in Fig. 4, the vertical walls of said chamber being provided with openings in which are located dampers *c*, the operating rods of which pass through pipes let into the walls and through the piers which extend above said walls to form a support for the crown of the kiln, so that they may be manipulated from the top of the kiln. These dampers *c* and *c′* cut off communication between the combustion chamber and the horizontal flues and furnaces. The horizontal flues communicate with the vertical flues or chimneys which are built in the side walls of the kiln, and these vertical flues or chimneys are each provided with a cut-off *d*, which is operated from the exterior of the kiln.

The side walls are provided with peep-holes, *e*, through which the contents of the kiln can be viewed.

The furnaces and horizontal flues are provided with apertures or openings *f f*, over which operate slides or cut-offs *g*, the operating rods of which pass through the side walls, and resting upon the arches of the furnaces and horizontal flues are strips *h* which make up the floor of the kiln.

The inner walls which form the combustion chamber only extend up to about the same height as the side walls, the crown of the kiln being supported by piers which extend above said walls, so that the products of combustion from the furnaces can pass from the kiln sections between the piers into the combustion chamber, and vice versa, as will be hereinafter described.

The crown is provided over each kiln section with a series of holes or apertures *s*, which may be opened when it is desired to cool the contents of the kiln.

The end walls are provided with upper and lower openings *a′* and a^2, the upper openings serving as a cold air inlet and the lower openings to increase the draft in the combustion chamber. The end walls are also provided with larger openings A^2, which are provided with doors and are used in storing the arti-

cles to be burned in the upper part of the kiln and removing them therefrom.

In burning the articles placed in the kiln the dampers or slides above the furnaces are closed while those above the longitudinal flues are opened, and the dampers *c* at the inner end of the furnaces are opened and those at the inner end of the longitudinal flues closed, so that when the fires are started in the furnaces the heat or products of combustion will pass into the central chamber up over the side walls thereof down through the articles stacked in the kiln sections into the horizontal flues to the chimneys. This arrangement provides a down-draft kiln.

When it is desired to use the kiln with an up-draft all the dampers are changed to the other position (those open being closed and those closed opened), when the heat or products of combustion will pass through the openings in the top of the furnaces up through the articles in the kiln sections between the pier into the combustion chamber and from there into the horizontal flues to the chimneys.

The slides or cut-offs over the openings *f* in the adjoining flues and furnaces may all be opened and the dampers *c* and *c'* closed, thus permitting a rapid escape of the heat from each furnace to the adjoining flue and chimney, and by also opening the apertures *s* cold air will be drawn down through the kiln sections to quickly cool the articles placed therein.

The furnaces and flues hereinbefore referred to are lined with fire-brick or other refractory material, and it will be noted that the crown covers the entire top of the kiln and rests upon the side and end walls, and is supported centrally by piers built above the vertical walls which separate the kiln sections from the combustion chamber.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A kiln comprising side and end walls constructed substantially as shown and central walls forming a chamber on each side of which are located the kiln sections, together with alternating horizontal flues and furnaces located beneath each kiln section, substantially as shown, and for the purpose set forth.

2. In a brick kiln constructed substantially as shown, the combination, of the side walls having vertical flues which communicate with horizontal flues having inner end openings with dampers, furnaces constructed similar to the horizontal flues and alternating therewith, and central walls forming a combustion chamber, said walls being apertured for the reception of rods carrying dampers which are adapted to cut the furnaces and longitudinal flues from the combustion chamber, substantially as shown, and for the purpose set forth.

3. In a kiln constructed substantially as shown and having central longitudinal walls, of horizontal flues and furnaces alternating with each other and located between the side and central walls, said horizontal flues and furnaces having apertures *f f* with cut-offs *g* and dampers which are adapted to cut off communication with the combustion chamber D, together with chimneys which lead from the horizontal flues, substantially as shown, and for the purpose set forth.

4. In a kiln constructed substantially as shown, the combination, of an outer structure comprising side and end walls and a crown, the end walls having openings and doors to provide access to the kiln sections and a central door communicating with the combustion chamber formed by inner walls, together with horizontal flues and furnaces alternating with each other and communicating with the combustion chamber, and dampers or cut-offs, substantially as shown, whereby either an up or a down draft may be provided in the kiln sections, for the purpose set forth.

5. In a kiln constructed substantially as shown and provided with side walls, having vertical flues, and end walls with doorways, interior walls with piers extending to the crown of the kiln, damper rods passing up through the interior walls and piers so as to be operated from the crown of the kiln, a series of horizontal flues and furnaces alternating with each other and provided with openings having cut-offs, as shown, said furnaces and horizontal flues communicating with a chamber or space between the interior walls, chimneys built in the side walls and leading from the horizontal flues, the furnaces and horizontal flues being located beneath the floor of the kiln and each furnace having an opening which extends through the side walls, the parts being organized substantially as shown, and for the purpose set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

ALPHEUS L. PLASTERS.
WILLIAM F. RANKIN.
JAMES M. WOLFE.

Witnesses:
C. R. BARROW,
A. L. GRAY.