

L. FALASCONI.
BRICK OR TILE KILN.

No. 491,995.

Patented Feb. 21, 1893.

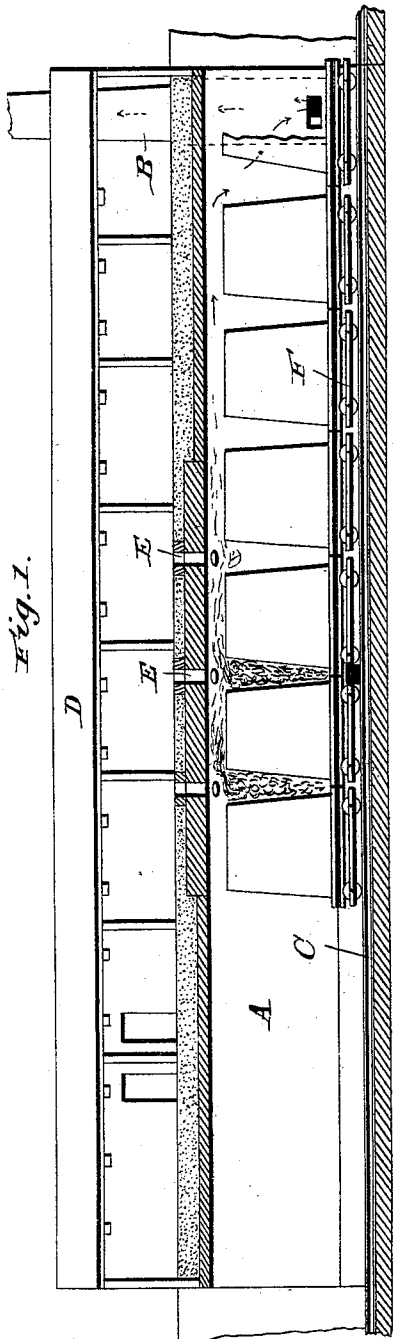


Fig. 1.

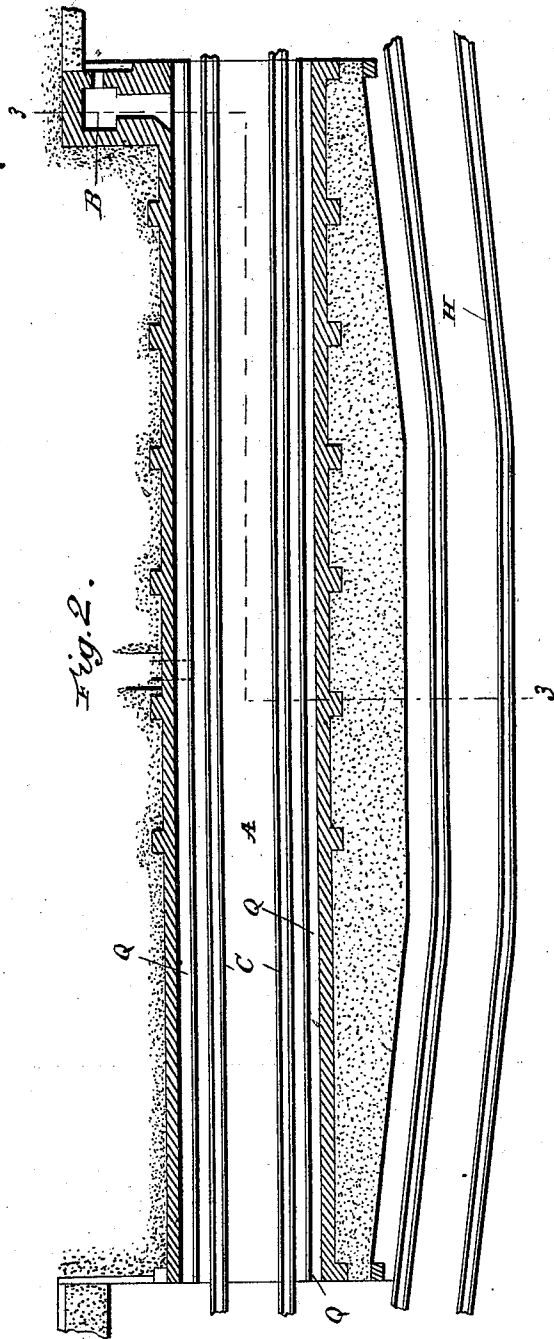


Fig. 2.

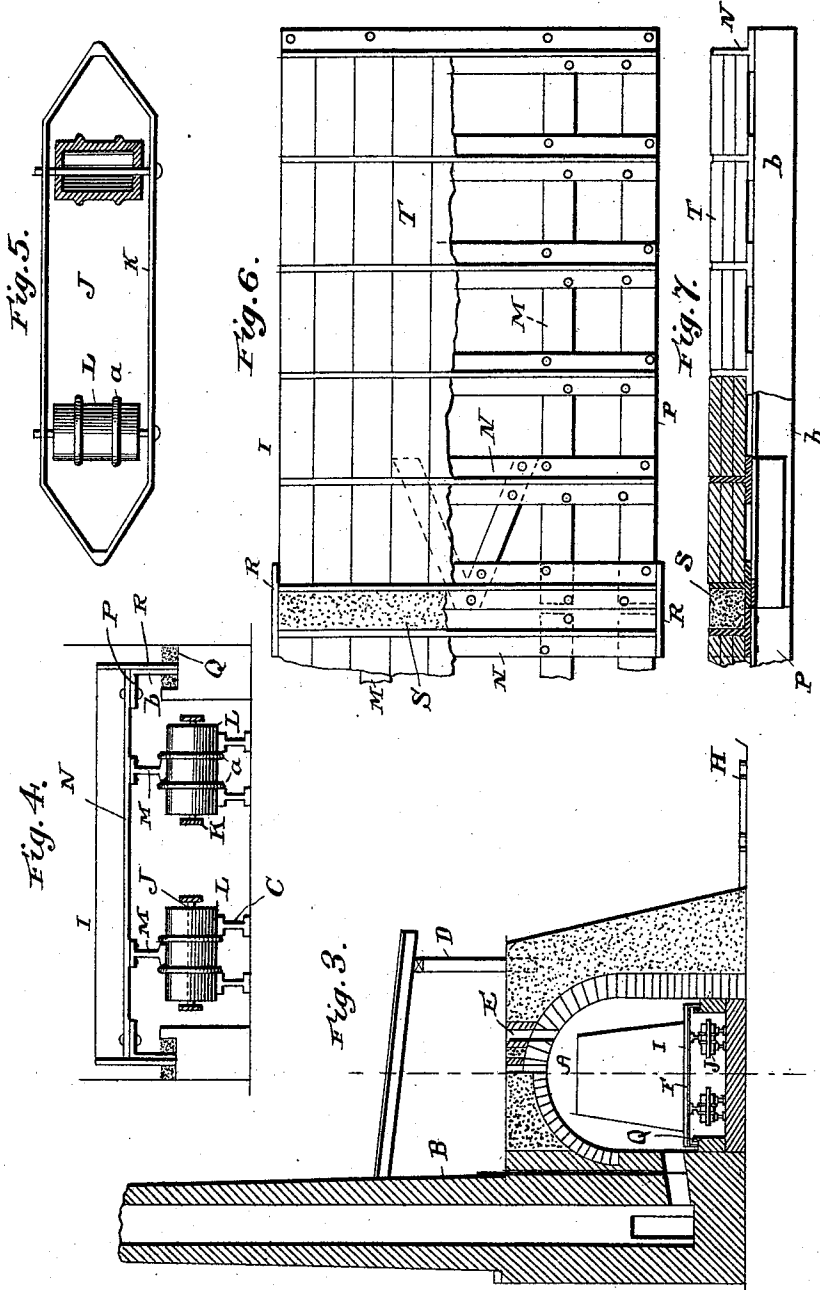
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UNITED STATES PATENT OFFICE.

LUIGI FALASCONI, OF FERMIGNANO, ITALY.

BRICK OR TILE KILN.

SPECIFICATION forming part of Letters Patent No. 491,995, dated February 21, 1893.

Application filed December 6, 1892. Serial No. 454,248. (No model.) Patented in Italy September 30, 1887, XLIII, 22,013, 348, and in England April 20, 1891, No. 6,798.

To all whom it may concern:

Be it known that I, LUIGI FALASCONI, of Giulio, a subject of the King of Italy, and a resident of Fermignano, county of Urbino, and Province of Pesaro, Italy, have invented a new and useful Improvement in Brick and Tile Kilns or Continuous Furnaces, (for which I have obtained Letters Patent in Great Britain, No. 6,798, dated April 20, 1891, accepted November 28, 1891, and in Italy, No. 22,013, Vol. 43, No. 348, dated September 30, 1887,) of which the following is a specification.

My invention relates to an improved method of and kiln for burning or drying bricks and other material, together with a plant or apparatus appurtenant to the kiln, and its novelty will be fully understood from the following description and claims when taken in connection with the accompanying drawings in which:

Figure 1, is a vertical, longitudinal, section of a kiln constructed in accordance with my invention. Fig. 2, is a horizontal section of the same. Fig. 3, is a vertical section on the line 3—3 of Fig. 2. Fig. 4, is a detail view of one of the cars and a portion of the kiln illustrating the manner of preventing a circulation of air between the lower and upper part of the kiln tunnel or gallery. Fig. 5, is a plan view partly in section of one of the car trucks. Fig. 6, is a plan view of one of the car platforms, with parts broken away to permit of a better illustration, and: Fig. 7, is a detail side elevation, partly in section, of the same.

Referring by letter to said drawings:—A, indicates the tunnel of my improved kiln which is preferably of a rectilinear form in cross section and is open at both ends as shown, and B, indicates a flue or uptake which communicates with the tunnel adjacent to the receiving end thereof and is designed to lead the smoke and particles of combustion from said tunnel after the same have passed the bricks or other material being treated as will be hereinafter described.

The tunnel A, which is designed to receive cars carrying the bricks or other material to be treated, may be made horizontal as illustrated, or may be inclined longitudinally so as to facilitate the movement of the cars, which

are designed to travel upon rails C, laid on the floor of the tunnel, as better illustrated in Fig. 1, of the drawings.

Arranged above the tunnel A, and preferably extending the full length thereof, is a shed D, which may be of any approved construction, and is designed to shelter coal or other fuel, which is fed into the tunnel A, through openings E, formed in the roof thereof, which openings E, are arranged the proportional distance illustrated apart, for a purpose presently disclosed.

In operating the kiln and carrying out my improved method of burning or drying bricks and the like, I first stack the bricks or other material upon a series of cars F, in the manner shown in Fig. 1, so that spaces will be formed between the stacks to receive the fuel for burning or drying the bricks; such spaces being arranged at a distance apart corresponding to the distance between the openings E, so that a plurality of the spaces may be charged with fuel at the same time, if desired, as will be presently explained. After the bricks or other material have been stacked upon the cars in the manner just described, the cars are moved into the tunnel upon the tracks C, until the spaces between the foremost cars come beneath the openings E, when such spaces are charged with fuel fed through said openings, and the fuel in the first or forward space or in all of the primary charged spaces is fired in any approved manner.

When the cars have been arranged on the tunnel A, and before the primary charges of fuel are fired, the receiving end of the tunnel is closed by a suitable bulkhead or the like (not illustrated) so that the smoke and particles of combustion will be conducted by the passing current of air from the fire or fires between the forward stacks, past the rear stacks and up the flue or uptake B. Thus it will be seen that the heat from the primary charges of fuel will act upon the rear stacks of bricks before passing out of the gallery, and will serve to heat the bricks before they are subjected to the direct action of fire.

When the materials are fully treated, the bulk head at the receiving end of the tunnel,

is removed and a car loaded with materials is pushed into the gallery after which the bulk head is replaced in position. This introduction of another car moves the train of cars first placed in the gallery, so that an empty space between two stacks will come beneath the opening E, nearest the receiving end of the gallery, or in a position to receive a charge of fuel fed through said opening.

At suitable intervals during the operation of the kiln, the bulkhead is removed and cars carrying green material, are introduced, by reason of which it will be seen that the empty spaces between the rear stacks will successively come into a position to receive the fuel fed through the openings E, and the foremost stacks will be caused to move gradually toward the discharge end of the gallery and will be gradually cooled by the passing air until they emerge from the open discharge end of the gallery or tunnel.

When the gallery or tunnel is entirely occupied by cars carrying the material to be treated, a car will be discharged from the discharge end of the gallery or tunnel every time a car with green material is placed in the receiving end thereof; and it will thus be seen that the operation of the kiln is continuous without loss of heat which is an important desideratum.

To facilitate the return of the cars F, to the receiving end of the kiln, after said cars have been discharged of their loads of treated materials, I provide the return track rails H, which are arranged at the side of the kiln and may be connected with the rails C, by suitable switches if desired.

It will be seen from the foregoing description taken in connection with the drawings that my improved kiln may be very easily and cheaply constructed, since it embodies only a single straight passage; and it will be further seen that the major portion of the walls thereof may be made comparatively thin, it being only necessary to have them thick at the middle of the gallery where the combustion of the fuel takes place. Furthermore it will be seen that a kiln constructed as described, may be readily charged and discharged and may therefore be worked to its full capacity by a comparatively small number of workmen, which is a highly important desideratum.

The cars F, which form part of the apparatus appurtenant to my improved kiln comprise trucks I, and platforms J, which are removably mounted upon the trucks for a purpose presently set forth. The trucks J, of which two are preferably employed in conjunction with each platform, respectively comprise a frame K, which is formed from metal in order to withstand the great heat, and two, (more or less) rollers L, which are mounted on transverse shafts *m*, carried by the frame K. These rollers L, are provided with peripheral ribs or flanges *a*, and are designed to travel upon the rails C, which are

arranged in two pairs as better shown in Fig. 4, of the drawings. By the provision of the trucks and the peculiar arrangement of the same together with the peculiar arrangement of the rails C, it will be seen that the great weight which is ordinarily placed upon the cars is evenly distributed over the floor of the gallery or tunnel A, and the said floor is enabled to sustain the same without being reinforced or ballasted.

M, indicates the longitudinally disposed rails of the platforms I, which rest upon the rollers L, between the flanges or ribs thereof, and serve to prevent lateral movement of the platform with respect to said rollers. These longitudinally disposed rails M, are connected as illustrated, by transverse T-irons N, which are arranged at about the proportional distance illustrated apart, for a purpose presently described. Connected in a suitable manner to the underside of the T-irons N, adjacent to the ends thereof, are angle irons P, which extend longitudinally of the platform as shown. The depending branches *b*, of these angle irons P, are designed to rest, when the car is in the tunnel or gallery A, in sand or the like arranged in channels Q, with which the said gallery A, is provided, whereby it will be seen that a circulation of air between the lower and upper parts of said gallery, through the space between the side edges of the platform and the walls of the gallery, will be prevented.

In order to prevent a circulation of air through the platform of the cars, I fill the spaces between the several T-irons N, with layers of bricks T, as better shown in Fig. 7, the lower layers being preferably formed of burned bricks cemented together with mortar, while the upper layers may be formed of green or partly dried bricks.

As better shown in Figs. 6, and 7, I provide one end of each car F, with longitudinal vertically-disposed strips R, which extend forward of the cars and serve in conjunction with the T-irons N, at the contiguous ends of two cars, to form receptacles S, which are filled with mortar or cement to prevent a circulation of air between the contiguous edges of the cars, when the same are connected together.

By reason of the construction just described it will be seen that when the cars are within the gallery or tunnel A, a circulation of air between the upper and lower parts of the gallery will be effectually prevented and the hot air will be retained in that portion of the gallery in which the materials to be treated are situated.

In addition to preventing a circulation of air through the platforms I, the layers of bricks T, on said platforms serve to protect the iron work of the cars from the action of the heat and thereby prolong the usefulness of said cars.

In the practice of my invention the cars may be moved through the gallery or tunnel A, by a windlass, hydraulic-power, or other

well known means which it is not deemed necessary to illustrate.

Although I have specifically described the construction of my improved kiln and the apparatus or plant employed in conjunction therewith, I do not desire to be confined to the same, as it is obvious to those skilled in the art that many changes or modifications may be made without departing from the spirit of my invention.

Having described my invention, what I claim is—

1. In a kiln, the combination with a gallery or tunnel, having an opening E, at an intermediate point in its length, and also having the channels Q, upon the inside of its side walls adapted to receive sand or the like; of a series of cars adapted to move in said gallery or tunnel and carry the material to be treated; the said cars being respectively provided with a platform comprising a series of transverse T-irons, bricks laid between said T-irons, the longitudinally arranged angle irons connected to the T-irons and adapted to engage the sand in the channels Q, of the gallery, and the longitudinally-arranged, vertically-disposed plates R, extending forwardly

from the platform and adapted to serve in conjunction with the T-irons at the contiguous ends of two cars to form a receptacle for the reception of mortar, or the like, all substantially as and for the purpose set forth.

2. In a kiln, the combination with a gallery or tunnel and the tracks C, laid upon the floor thereof and arranged in pairs; of a car adapted to move in the gallery or tunnel, and consisting of the trucks comprising the frames, and the rollers mounted on shafts carried by the frames and respectively provided with a plurality of peripheral ribs or flanges, and the platform loosely mounted on the truck rollers and having the longitudinally arranged rails adapted to rest between the ribs or flanges of said rollers, substantially as and for purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 4th day of November, 1892.

LUIGI FALASCONI.

Witnesses:

UGO CATTANECE,
SIPIONE TAIT.