

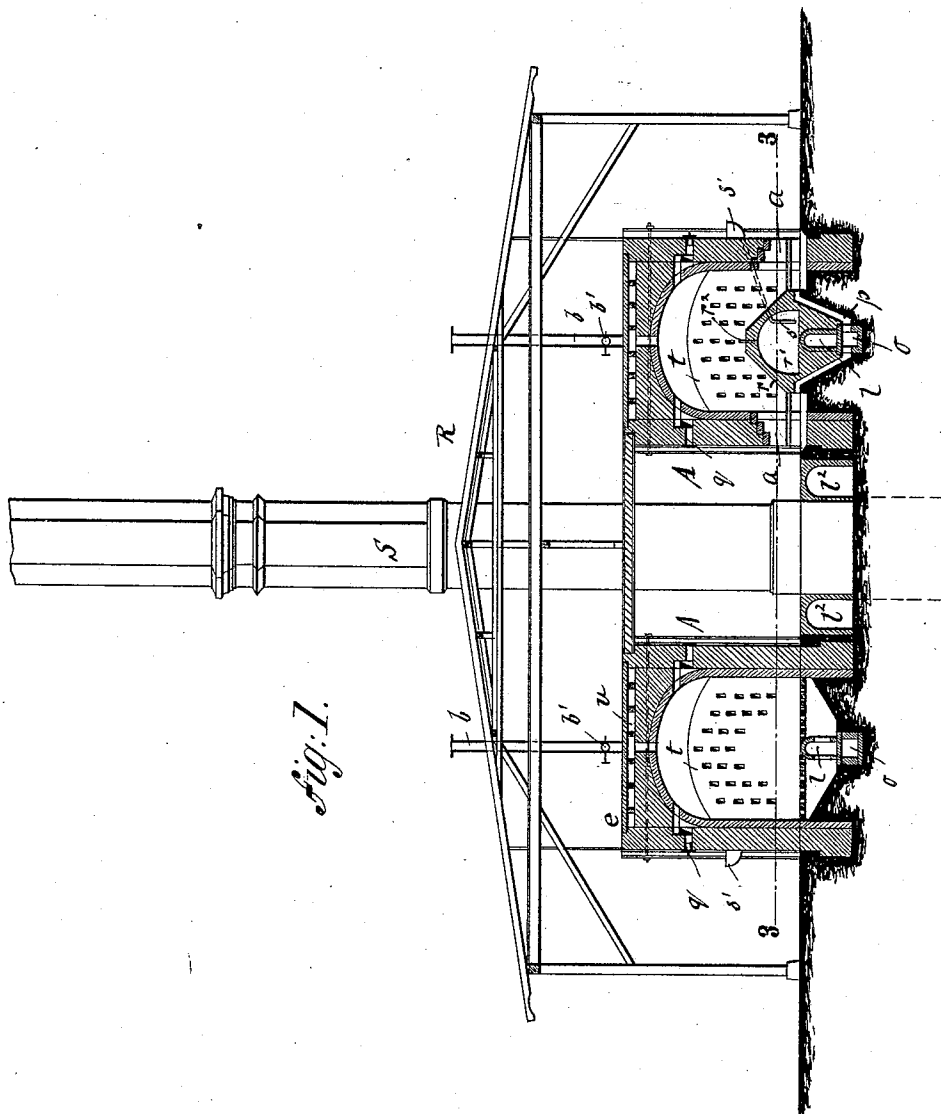
(No Model.)

3 Sheets—Sheet 1.

A. DIMPFL.
BRICK KILN.

No. 475,267.

Patented May 17, 1892.



WITNESSES:
A. Seehel.
Marion Hall

INVENTOR
Anton Dimpfl
BY
George A. Regner
ATTORNEYS.

(No Model.)

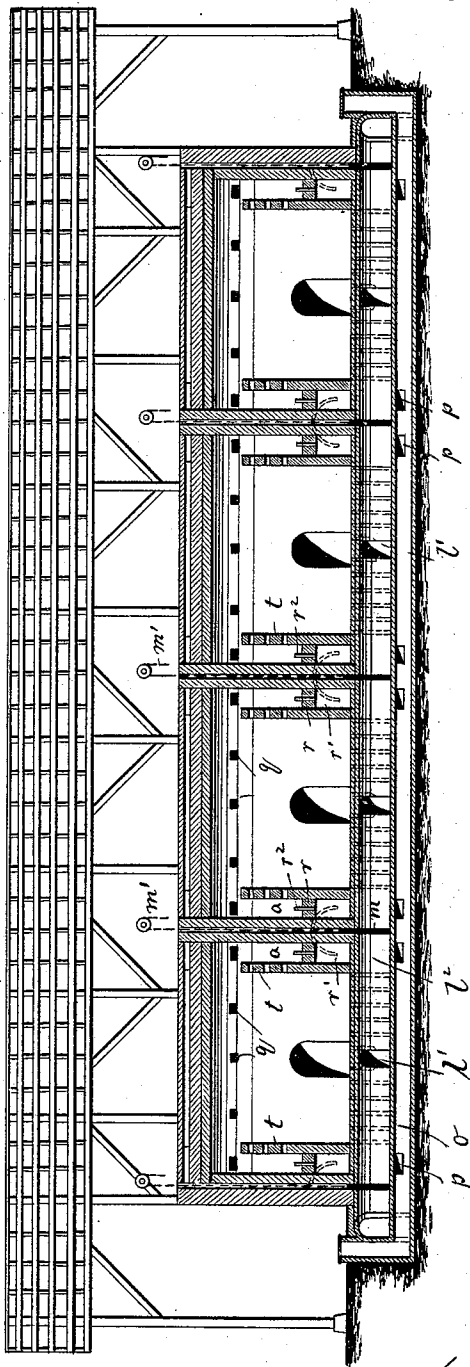
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A. DIMPFL.
BRICK KILN.

No. 475,267.

Patented May 17, 1892.

Fig. 2.



WITNESSES:
A. Schohl.
Marion Hall

INVENTOR
Anton Dimpfl
BY
Loefer & Paquier
ATTORNEYS.

(No Model.)

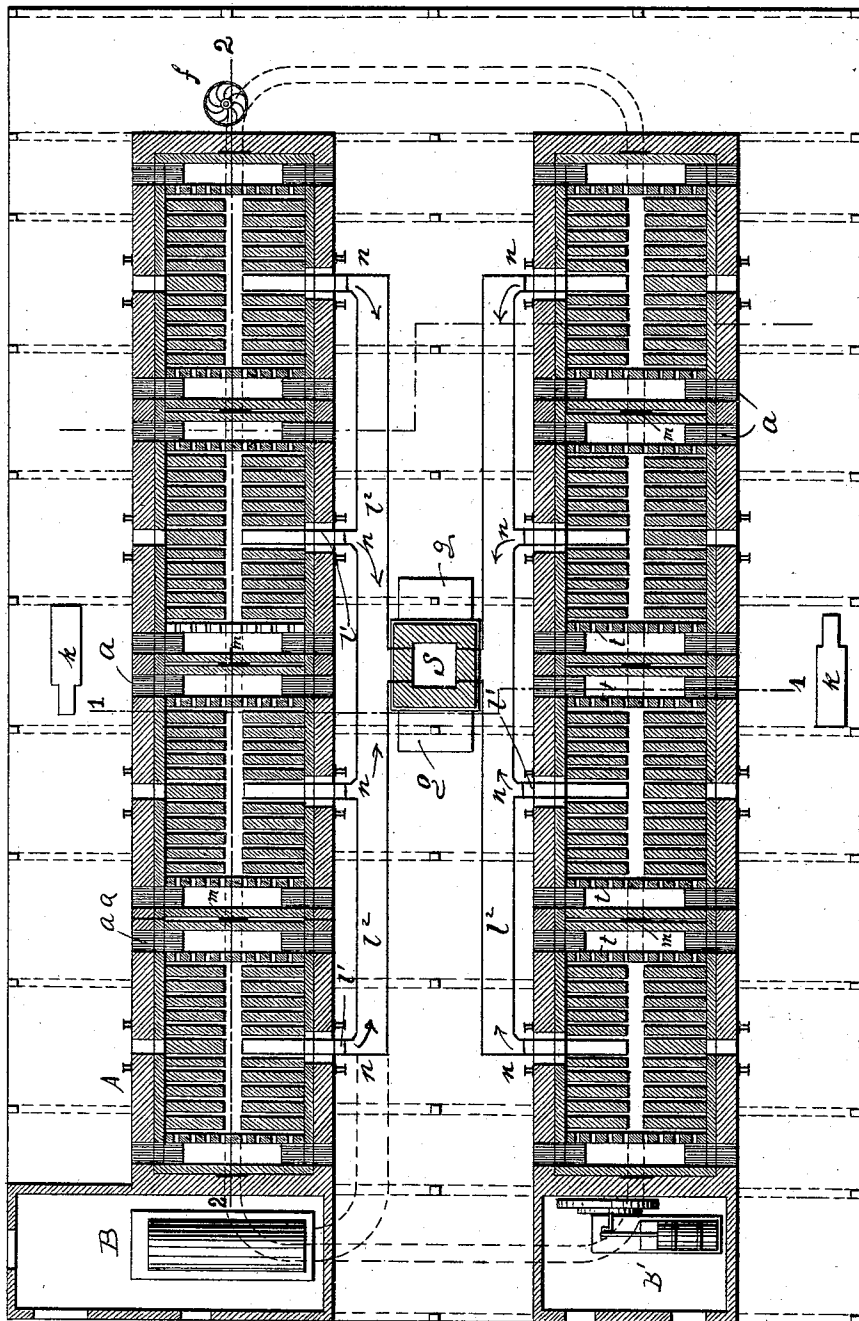
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Fig. 3.



WITNESSES:

A. Schehl.
Marion Hall



INVENTOR

Anton Dimpfl

BY

Joseph Raegner
ATTORNEYS.

UNITED STATES PATENT OFFICE.

ANTON DIMPFL, OF MUNICH, GERMANY, ASSIGNOR TO AMEDEE POLETTI, OF WEST HOBOKEN, NEW JERSEY, AND JACOB KOHN, OF NEW YORK, N. Y.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 475,267, dated May 17, 1892.

Application filed September 5, 1891. Serial No. 404,809. (No model.)

To all whom it may concern:

Be it known that I, ANTON DIMPFL, a subject of the Emperor of Germany, residing at Munich, in the Kingdom of Bavaria and Empire of Germany, have invented certain new and useful Improvements in Kilns, of which the following is a specification.

This invention relates to improvements in the construction of kilns for burning building-bricks, pavement-blocks, fire-bricks, ornamental shaped or formed blocks, and slabs for flooring, (terra-cotta stone,) conduits, troughs, and artificial stoneware generally, to which, by the burning in the kiln, the following characteristics are imparted: a well-vitrified body, a closely-grained texture, great durability, strength, and hardness, resistance to attrition, impermeability to the absorption of moisture, great resistance to heat, and a sonorous sound when struck. These objects are accomplished by my improved kiln, which is formed of a number of individual combustion-chambers, which are arranged end to end and provided at each end with two fireplaces at opposite sides, to the grates of which air is conducted by suitable flues, while steam is supplied to the products of combustion by means of arched water-reservoirs and steam-nozzles arranged in the top of the same. The articles to be burned are protected by transverse partition-walls near each fireplace, over which the heat products of combustion are conducted and passed off through lateral openings in the floor of the chamber into suitable flues that lead to the chimney. Sliding dampers are arranged in the main flue, which is arranged longitudinally below the different chambers between two adjoining chambers and in the lateral flues that lead to the chimney, so that two or more kilns can be operated together and the heat of one kiln be utilized for heating up the articles in the next adjoining kiln, and so on. On the top of the kiln are arranged a flooring and a drying-room, which is heated by flues below the flooring, the preparatory operations for forming and drying the articles being carried on in the drying-room and from there distributed to the different kilns.

In the accompanying drawings, Figure 1 represents a vertical transverse section on line

1 1, Fig. 3, of my improved kiln for burning stoneware. Fig. 2 is a vertical longitudinal section of the kiln on line 2 2, Fig. 3; and Fig. 3 is a horizontal section on line 3 3, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents my improved kiln, of which a number are arranged, preferably, in line with each other by abutting at their ends, two longitudinal lines of kilns being preferably arranged connected to one central smoke-stack S and placed under one common roof R, which is supported in a suitable manner, as shown in Figs. 1 and 2.

At the end of one series of kilns is arranged a steam-boiler B, and at the end of the other series of kilns the engine B', by which the power is produced necessary for running the different elevators and machines for preparing and forming the different articles to be burned. At the end of each series of kilns are arranged spiral elevators *f f* for the materials required in making the artificial stoneware, while at both sides of the smoke-stack S are arranged the elevators *g g* for conveying the formed articles from the drying-room, that is arranged above the kilns, to one side openings in the different kilns, by which the different chambers of the kilns are charged. The pressing-machines *k k* for building and other bricks are arranged at the outside of the kilns, while all the remaining hand and other presses by which specially shaped and ornamental articles are to be pressed are placed in the drying-room above the kilns and on the floor, which is supported on transverse beams between the kilns, as shown in Fig. 1. Each kiln A is provided, for the purpose of producing as intense a burning-heat as possible in the same, with a fireplace at each corner. The fireplaces are supplied with heated air by means of a longitudinal air-channel *o*, that extends longitudinally below each series of kilns and that communicates by a lateral channel *p* (shown in Fig. 1) with the space below the grate. The air is drawn through the flue *o* by the suction produced by the smoke-stack and heated up in its passage by the heat radiated by the bottom of the kilns. The two fireplaces at the end of each kiln are connected by an arched fire-bridge *v*, in the

interior of which an arched water-reservoir r' for water is arranged. This reservoir is supplied with water by a supply-pipe s , that connects the interior of the reservoir r' with an exterior trough s' , which is supplied with water in a suitable manner. In the top of the arched fire-bridge r is arranged a steam-outlet pipe p^2 , having a spring-nozzle, through which the steam escapes, so as to be mingled with the fire-gases and be decomposed into oxygen and hydrogen, by which not only the more perfect combustion of the fire-gases is produced and an intense heat produced, but by which, also, the carrying along of coal articles by the fire-gases and the deterioration of the burned articles by means of said particles, ashes, and the like is prevented. At the interior of each kiln A are arranged, near the end fire-places, transverse partition-walls t , which are provided with a number of perforations above the fire-bridge. These partition-walls serve to some extent as returning-walls, so as to retain any coarse particles that are carried up by the fire-gases, and also for deflecting the greater part of the fire-gases toward the arched top of the kiln, from which they are then conducted in downward direction around the articles to be burned, and drawn off through transverse slotted openings in the floor or bottom of the kiln into the main flue l , that extends longitudinally below each series of kilns and communicates with the transverse floor-openings by corresponding openings in its side walls, as shown in Fig. 1, left-hand side. From the main flue l for the products of combustion extend, at the middle part of each kiln, lateral flues l^2 , with the smoke-stack S , as shown clearly in Fig. 3. Between the end walls of the kilns are arranged, in the longitudinal main flue l , slides m , which are operated by suitable chains m' from the top part of the kiln, while in the lateral flues l^2 slides n are arranged, which slides serve for the purpose of connecting any two adjoining kilns, and permitting thereby the products of combustion in one kiln to pass into the next adjoining kiln, whereby the heat still contained in the same is utilized for the preparatory heating of the articles in the same. While the first kiln is emptied, the fires in the second kiln are started, and the articles which were subjected to preparatory heating in the same subjected to the final burning, the products of combustion of the second kiln being then conducted into the third kiln, and so on, whereby a continuous operation of the different kilns is obtained in the manner well known in kilns of this class. In the side walls of the kilns, near the arched top of the same, are arranged air-inlet openings q , through which the surplus heat may be discharged whenever it should be required. This may also be used when each kiln is operated independently of the other kilns, and the slides m and n of the same remain closed. The drying-room above the kilns is kept at a suitable high temperature, required from the

different pressing and drying operations that are carried on in the same, by arranging a flooring e on the kilns and smaller channels u below said flooring, which channels are heated from the kilns. To prevent a too high temperature in the drying-room, the heat can be passed off by means of outlet-pipes b , which pass from the top of the kilns through the roof of the drying-room to the outside, said outlet-pipes being provided with damper b' , on the opening of which the surplus heat can be passed off to the atmosphere. The main flues of each series of kilns are connected at the ends of the series by means of connecting-flues, as shown clearly in dotted line in Fig. 3, so that the end flues may also be operated in connection with each other in the same manner as two adjoining kilns.

For burning artificial paving-blocks a mixture of ground dolomite, which is composed of a mixture of calcium carbonate and magnesium carbonate, is mixed with silicious earth, clay, water, or tar in such a manner that a plastic mass is obtained, from which the paving-blocks are produced by pressure. The carefully-dried blocks are then placed in the kiln and subjected to a white heat for several days, by which operation the size of the same is reduced considerably, but in ascertained proportions. The paving-blocks thus obtained are very strong, have a sonorous sound like porcelain, and possess the quality of being absolutely fire-proof.

Fire-bricks are made of silicious earth, which is composed of quartz and sand-clay, burned and ground clay, and cement. This mixture is mixed with water in a suitable mixing-machine and conveyed by the elevator f to the drying-room, where it is formed into blocks by any approved appliances, dried and pressed by means of suitable presses into the required shape, then subjected to final drying, and finally to the burning operation in the kiln. Ornamental stoneware for architectural purposes, conduits, &c., are formed of a mixture of clay containing slate, aluminous earth containing a considerable quantity of calcium carbonate, silicious earth, and cement. They are mixed, formed, and burned in the same manner as the fire-bricks and either coated with a suitable enamel having the color of sandstone or mixed with pulverized fluor-spar, or coated at the surface with a layer of the same, after which they are subjected to a light burning in and rendered water-proof by means of alkali silicate, upon which they are finally hardened by burning.

The advantages of my improved kiln are: first, a considerable saving in fuel by the supply of air and steam to the fireplaces and products of combustion; secondly, the complete utilization of the heat of the kilns in the drying-room; thirdly, the protection of the articles which are burned in the kiln against deterioration by coal particles, flying ashes, and the like; fourthly, the uniform distribution of the heat in the kiln; fifthly, the quick

cooling of each kiln after the burning is completed by conducting the air through the different air-flues into the kiln and conducting off the heat through the outlet-openings at the top of the kiln; sixthly, the preventing of the caking together of the articles by the transverse partitions arranged sidewise of the fireplaces.

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

1. In a kiln for burning artificial stoneware, the combination, with the combustion-chamber having fireplaces at each corner of the same, of a large fire-bridge connecting two end fireplaces, transverse perforated partitions extending above said fireplaces, air-flues communicating with the spaces below the grates and fireplaces, transverse slotted openings in the floor of the combustion-chamber, and a main flue for the products of combustion communicating with said transverse channels, said main flue being connected to the smoke-stack, substantially as set forth.

2. In a kiln for burning stoneware, the combination, with the combustion-chamber, of a

fireplace arranged at each corner of the kiln, transverse fire-bridges between two end fireplaces, arched water-reservoirs in said fire-bridges, and outlet-pipes at the top of said arched bridges provided with spring-nozzles, substantially as set forth.

3. In a kiln for burning artificial stoneware, the combination, with the combustion-chamber of the kiln, of fireplaces arranged in each corner of the same, transverse fire-bridges connecting two end fireplaces, a water-reservoir arranged in said fire-bridges, supply-troughs located at the side wall of the kiln, connecting-pipes leading from said troughs to the interior of the reservoir, and outlet-pipes in the top part of the arched reservoirs provided with spray-nozzles for the steam, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ANTON DIMPFL.

Witnesses:

EDW. W. MEALEY,
EMIL HENZEL.