(No Model.)

F. A. WILKE.

CHINA FIRING KILN.

No. 427,941. Patented May 13, 1890.

Fig. 1.

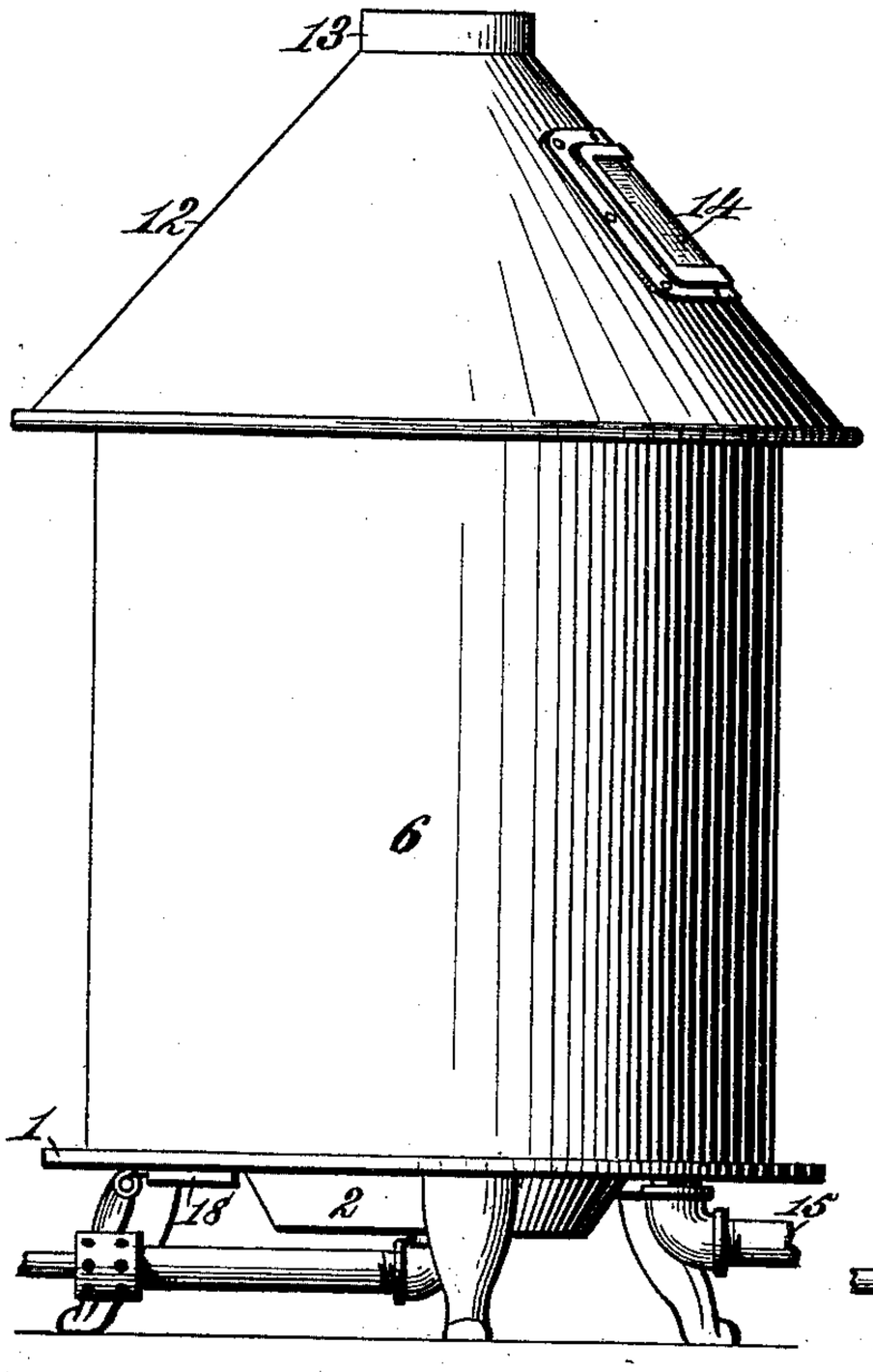


Fig. 2.

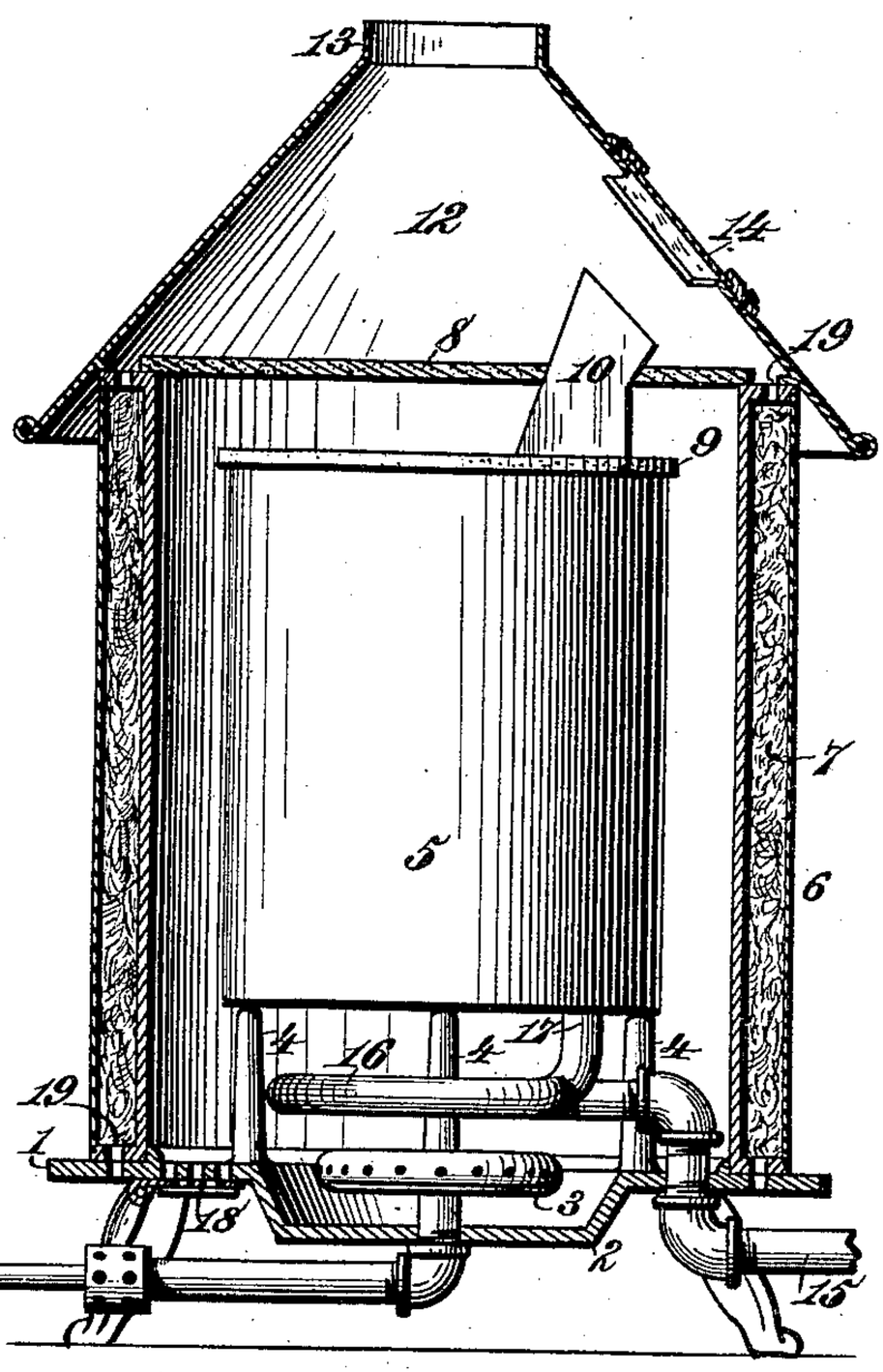


Fig. 3.

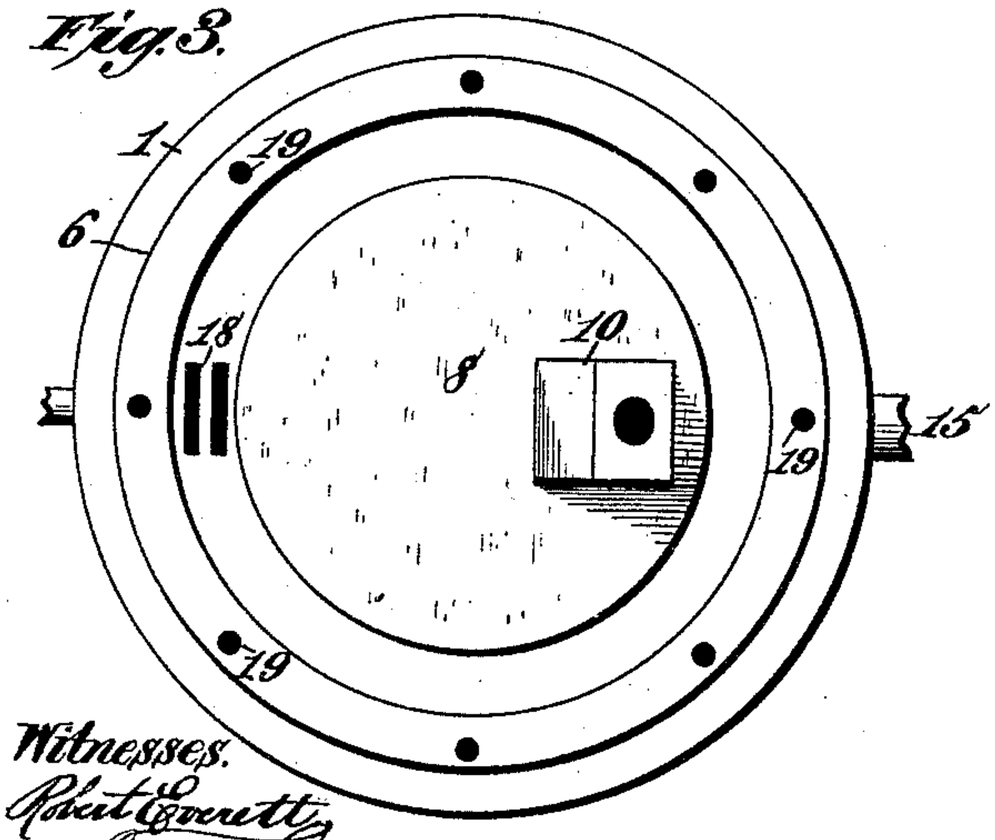
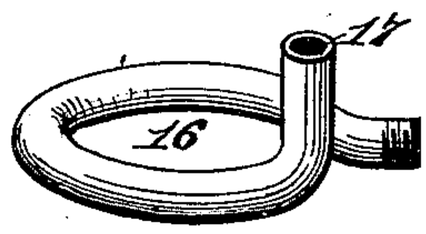


Fig. 4.



Witnesses.
Robt Everett
J. A. Rutherford

Inventor.
Frederick A. Wilke.
By James L. Norris.
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FREDERICK A. WILKE, OF RICHMOND, INDIANA.

CHINA-FIRING KILN.

SPECIFICATION forming part of Letters Patent No. 427,941, dated May 13, 1890.

Application filed March 1, 1890. Serial No. 342,245. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK A. WILKE, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented new and useful Improvements in China-Firing Kilns, of which the following is a specification.

This invention has for its objects to provide a new and improved kiln for firing decorated china; to provide novel means whereby the firing-pot can be conveniently inspected, while cold air is effectually excluded therefrom; to provide a kiln wherein a tube on the lid of the firing-pot serves to conduct the fumes from the china into a hood connected with a chimney, and, conjointly with a sight-pane, enables the attendant to inspect or observe the china; to provide novel means whereby the fumes are forced direct to a chimney in contradistinction to escaping into the room or apartment, and to provide novel means which intensifies the heat and confines it to the sides and top of the firing-pot to secure a uniform flow of the glazing, which is particularly desirable and useful when a matched set of dishes is to be fired.

To accomplish all these objects my invention involves the features of construction, the combination or arrangement of parts, and the principles of operation hereinafter described in detail, and specifically set forth in the claims, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of a china-firing kiln embodying my invention. Fig. 2 is a vertical central sectional view of the same, showing the firing-pot in side elevation. Fig. 3 is a top plan view omitting the hood and the lid of the external casing or cylinder. Fig. 4 is a detail perspective view of the air-heating draft-pipe.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates a cast-iron base-plate supported by legs and having a central depression-chamber 2 to form a chamber, in which is placed a gasoline or similar burner 3, the supply-pipe of which passes through the bottom of the depression to the oil-tank or other source of fuel. The base-plate is cast or otherwise provided with upwardly-projecting studs 4, on which rests the bottom wall of the cylindrical or other properly-shaped firing-pot 5, whereby a suitable space is provided between the pot and the base-plate. A hollow casing or cylinder 6 surrounds the firing-pot and rests on the base-plate, such casing or cylinder rising above the top of the firing-pot and containing a non-conducting filling 7 of mineral wool or asbestus. A fire-proof lid 8 of asbestus rests on the upper end of the casing or cylinder, and the construction is such that a space is provided over the top of the firing-pot and between the side thereof and the interior of the casing or cylinder, whereby the heat generated by the burner is confined in a space extending around all parts of the firing-pot, by which means the heat is intensified and a fired instead of a baked product is yielded.

The top of the firing-pot is provided with a metallic or other suitable lid 9, from which rises an inclined funnel-shaped tube 10, which projects through an orifice in the asbestus or other fire-proof lid 8 of the non-conducting casing or cylinder. A conical sheet-metal hood 12 is placed over and rests upon the casing or cylinder and at its apex with a collar 13 to connect by a flue or stove-pipe with a chimney of the building or factory. The hood is provided with an inserted pane 14, of mica or other appropriate transparent material, fitted air-tight in the opening provided for it to prevent the escape of the fumes from the china at this point. The funnel-shaped tube is located in alignment with the inserted sight-pane and terminates at its upper end below the inner side of the hood, which construction and arrangement subserve two functions: first, to conduct the fumes from the firing-pot into the hood, from whence they pass direct to the chimney, and, second, to enable the attendant to inspect the interior of the firing-pot and observe the condition of the china undergoing treatment.

In this type of kilns it is desirable to create a forced draft in the firing-pot by means of warm or hot air, for the purpose of forcing out the fumes, and this is rendered possible by simple means through the medium of the funnel-shaped tube, which serves as a ventilating-tube to direct the fumes to the chim-

ney. A cold-air forcing or draft pipe 15 passes through the base-plate or through the lower end of the cylinder, and is formed into or provided with a coil, or is otherwise bent around, as at 16, to constitute an air-heater, and the extremity 17 of the pipe is inserted through the lower end portion of the firing-pot. The air forced or passing through this pipe is warmed in the heater portion 16 by the burner and enters the firing-pot in a warm or hot condition, creating a draft, by which the fumes are carried off through the funnel-shaped tube into the hood and thence to the chimney. The hot-air draft through the firing-pot not only carries off the fumes from the china, but secures a uniform flow of the glazing, which is an important advantage, especially where a matched set of dishes is to be fired. The base-plate may be provided with a register 18, comprising orifices opened and closed by a slide to regulate the draft in the chimney. The products of combustion pass to the chimney by the opening in the asbestus lid, through which the funnel-shaped tube extends; but the heat and products of combustion only pass off after acting on the bottom, side, and across the top of the firing-pot, so that the best results are attained.

The casing or cylinder is composed of a cast-iron inner wall and a sheet-iron outer wall, and, as before stated, the intervening space is packed with mineral wool or asbestus to produce a non-conducting wall. The ends of the casing or cylinders are in the form of collars, having openings 19, Fig. 3, whereby heat can escape from the casing or cylinder while the non-conducting filling is confined in place.

The draft-pipe, having an air-heating portion, provides means whereby cold air is effectually excluded from the interior of the firing-pot, for the air enters the latter in a hot condition and forces the fumes from the china through the funnel-shaped tube, and obviously so long as this operation continues no cold air can gain access to the china under treatment. The termination of the funnel-shaped tube below the inside of the hood also contributes in excluding cold air at all times and prevents the passage of fumes into the apartment containing the kiln.

The heating of the air prior to its delivery into the firing-pot to secure the ventilation is an important feature, in that it drives off all fumes, and thereby avoids discoloration of the china.

The improved kiln is so constructed that cold air is effectually excluded from the firing-pot, in which the decorated china is stacked, and the cold-air pipe, in combination with the air-heating coil and the ventilating and observing tube, provides for rapidly forcing the fumes from the china by means of hot air, which results in the uniform flow of the glazing. The non-conducting casing or cylinder intensifies the heat and confines it to all parts of the firing-pot to yield a fired and not a baked china, and the transparent sight-pane, conjointly with the funnel-shaped tube, enables the operator to conveniently take observations of the ware without removing plugs or admitting cold air or permitting fumes to escape into the apartment containing the kiln.

Having thus described my invention, what I claim is—

1. A china-firing kiln consisting of a base, a firing-pot, a casing surrounding the firing-pot, a lid for the casing, a hood having a sight-pane inserted in an opening therein, and a lid for the firing-pot having a ventilating-tube arranged in alignment with the sight-pane, and terminating below the sight-pane to deliver the fumes into the hood and serve, conjointly with the sight-pane, for observing china, substantially as described.

2. A china-firing kiln consisting of a base, a firing-pot, a casing surrounding the firing-pot, a lid for the casing, a hood having a collar to connect with a stove pipe or flue and provided with a sight device, a hot-air-draft pipe connected with the lower part of the firing-pot, and a lid for the latter having a tube arranged in alignment with the sight device, and terminating inside the hood to deliver the fumes thereinto and serve, conjointly with the sight device, for observing the china, substantially as described.

3. A china-firing kiln consisting of a firing-pot, a heat-generator for the latter, a hood above the same, a lid for the firing-pot provided with a ventilating-tube terminating inside the hood to deliver the fumes thereinto, and an air-draft pipe heated by the heat-generator and opening into the firing-pot to force the fumes into the hood in transit to a chimney, substantially as described.

4. A china-firing kiln consisting of a base, a firing-pot, a casing surrounding the latter, a heat-generator, a lid for the casing, a hood over the latter provided with a sight device and having means to connect with a chimney, a lid for the firing-pot having a funnel-shaped tube extending through the casing-lid and terminating below the sight device to deliver the fumes into the hood for passage to the chimney, and a hot-air-draft pipe connected with the lower end of the firing-pot to force the fumes into the hood and secure a uniform flow of the glazing, substantially as described.

5. A china-kiln consisting of a firing-pot, a burner below the same, a hood above the firing-pot, a lid for the firing-pot having a tube opening into the hood to deliver thereinto the fumes from the china, and an air-draft pipe having a part extended under the fire-pot, heated by the burner and connected with the firing-pot for delivering hot air thereto to force the fumes into the hood in transit to a chimney, substantially as described.

6. A china-firing kiln consisting of a base-plate having studs on its upper side, a burner located between the studs, a firing-pot resting on and supported by the studs, a casing packed with non-conducting material resting on the

base-plate and rising above the firing-pot, a fire-proof lid on the casing, a hood supported by the latter and having an inserted sight-pane, and a lid on the firing-pot having a funnel-shaped tube extending through the fire-proof lid in alignment with the sight-pane and terminating inside the hood to deliver thereinto the fumes from the firing-pot, substantially as described.

7. A china-firing kiln consisting of a base-plate having studs on its upper side, a firing-pot resting on and supported by the studs, a casing packed with non-conducting material resting on the base-plate and rising above the firing-pot, a fire-proof lid for the casing, a hood located over the latter and having an inserted sight-pane, a lid for the firing-pot having a tube extending through the fire-proof lid in alignment with the sight-pane and terminating inside the hood to deliver thereinto the fumes from the firing-pot, and a hot-air-draft tube connected with the lower end of the firing-pot, substantially as described.

8. A china-firing kiln consisting of a base-plate having studs on its upper side, a firing-pot resting on and supported by the studs, a casing surrounding and rising above the firing-pot and composed of inner and outer walls, an interposed non-conducting material and end collars having perforations for the escape of heat, a fire-proof lid for the casing, a hood over the casing, and a lid for the firing-pot having a tube extending through the fire-proof lid and terminating inside the hood to deliver thereinto the fumes from the firing-pot, substantially as described.

9. A china-firing kiln consisting of a base-plate having studs on its upper side, a firing-pot resting on the studs, a casing composed of inner and outer walls and an interposed filling of mineral wool or asbestus, a fire-proof lid resting on the upper end of the casing, a hood located over and supported by the covered casing, and a lid on the firing-pot having a funnel-shaped tube extending through the fire-proof lid of the casing and terminating inside the hood to deliver thereinto the fumes from the firing-pot, substantially as described.

10. In a china-firing kiln, a firing-pot provided with a lid having a ventilating-tube, and a draft-pipe extending into an air-heating coil and connected with the firing-pot, in combination with a hood into which the ventilating-tube delivers the fumes from the firing-pot, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

FREDERICK A. WILKE.

Witnesses:

HENRY C. STARR,

WILLIAM K. YOUNG.