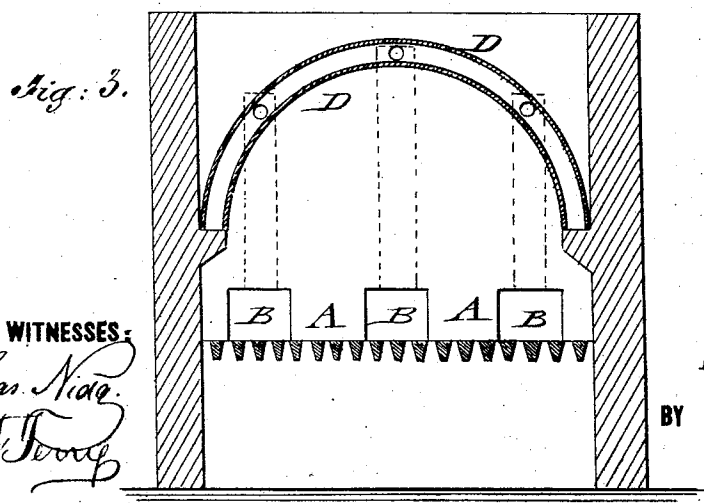
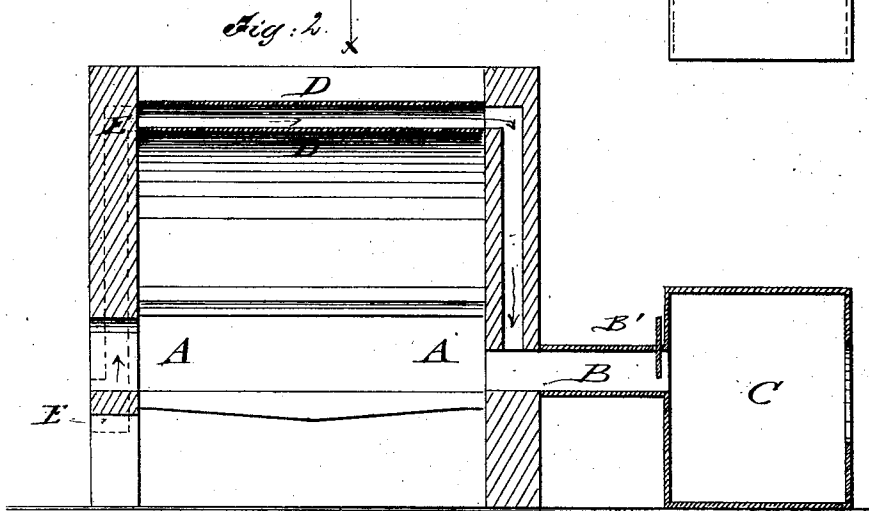
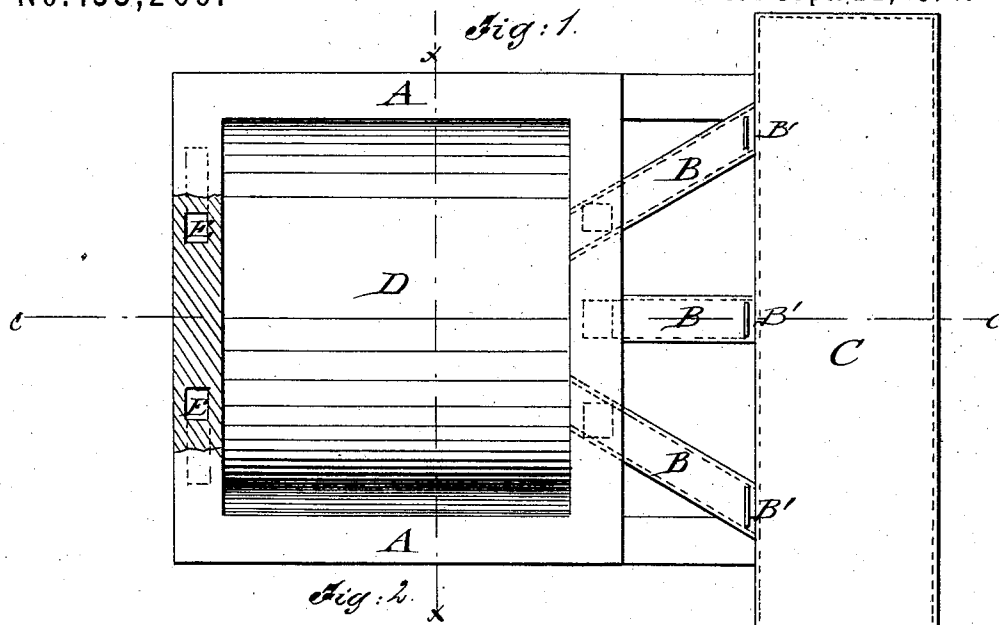


G. C. SURLS.  
Furnaces for Burning-Kilns.

No. 155,269.

Patented Sept. 22, 1874.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE C. SURLS, OF ROCHESTER, PENNSYLVANIA.

## IMPROVEMENT IN FURNACES FOR BURNING-KILNS.

Specification forming part of Letters Patent No. **155,269**, dated September 22, 1874; application filed August 29, 1874.

*To all whom it may concern:*

Be it known that I, GEORGE C. SURLS, of Rochester, in the county of Beaver and State of Pennsylvania, have invented a new and Improved Furnace for Kilns, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a plan view of my improved furnace for kilns; Fig. 2, a vertical longitudinal section on the line *c c*, Fig. 1; and Fig. 3, a vertical transverse section of the same on the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

My invention relates to a heating-furnace for brick, drain-pipes, and earthenware-kilns, in which an intense and regular degree of temperature is required for burning the wares.

The cheapest kind of fuel may be used in this furnace, and such a quantity of combustible gases produced and mixed with heated air conducted thereto, that a considerable saving in fuel is obtained by the more complete combustion of the same.

My invention consists of a furnace of suitable capacity with double arches placed over the fire-box, which form an air-space, connecting with front air-flues for heating up the air and conducting the same by rear flues to flues connecting the furnace with the kiln, so as to produce the intermixture and complete combustion of the fire-gases on their entrance to the kiln.

In the drawing, A represents a furnace of suitable size, which is connected at the rear by a series of flues, B, with the brick or potter's kiln C, in which the wares are to be burned. The flues B are provided, at the mouths or arches of kiln C, with dampers B', by which the amount of heat can be regulated,

so that the flues take up an equal proportion of the same. The fire-box A is arched by two concentric plates, D, which are seated at suitable distance from each other on bearings of the side walls of the fire-box, and form an air-space for heating up the air passing through between the arches. Front air-flues E serve for conducting the air into the air-space between the arches, and then, by downward-connecting rear flues E', to the flues B, where the heated air is brought in connection with the fire-gases from the furnaces, so as to mingle therewith and cause their complete combustion as they enter the arches or mouths of the kiln.

Hitherto the best of lump or nut coal had to be employed for burning bricks and earthenware; but with this furnace any fine slack or coal-dust may be burned, the furnace being large and so arranged that a large quantity of fire-gases is produced from the fuel, a considerable saving of fuel is thereby obtained, while the furnace itself can be built with much less material and expense than any of the furnaces built with rear hot-air chambers or smoke-burners.

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

The combination of the double arch of the furnace and its air-conducting front and rear flues with the kiln-connecting flues for producing the intermingling and complete combustion of the heated air and the fire-gases at the mouths or arches of the kiln, substantially for the purpose set forth.

GEORGE C. SURLS.

Witnesses:

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