No. 669,994. Patented Mar. 19, 1901.

G. E. LINK.

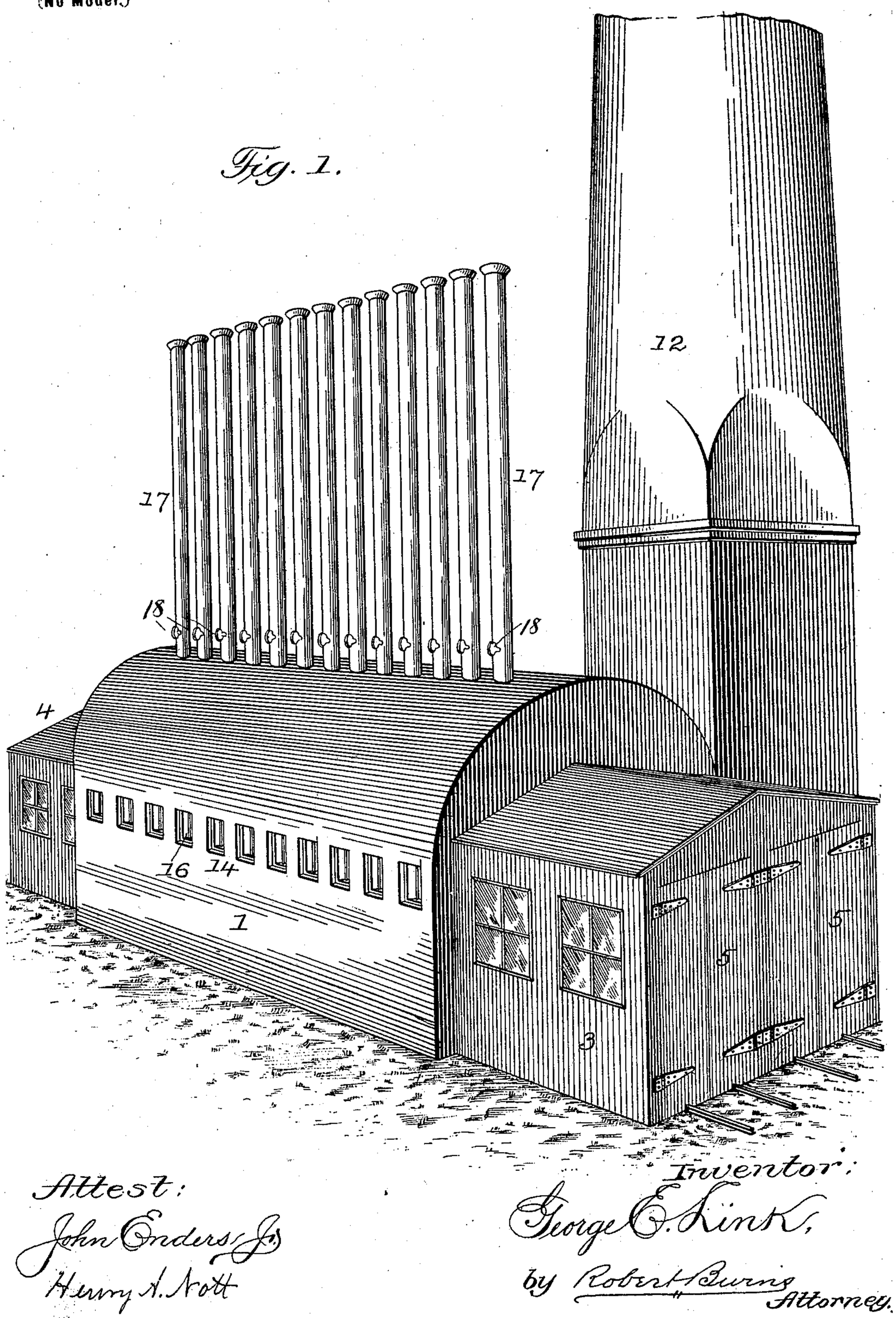
BRICK DRYING OVEN.

(Application filed Apr. 25, 1900.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

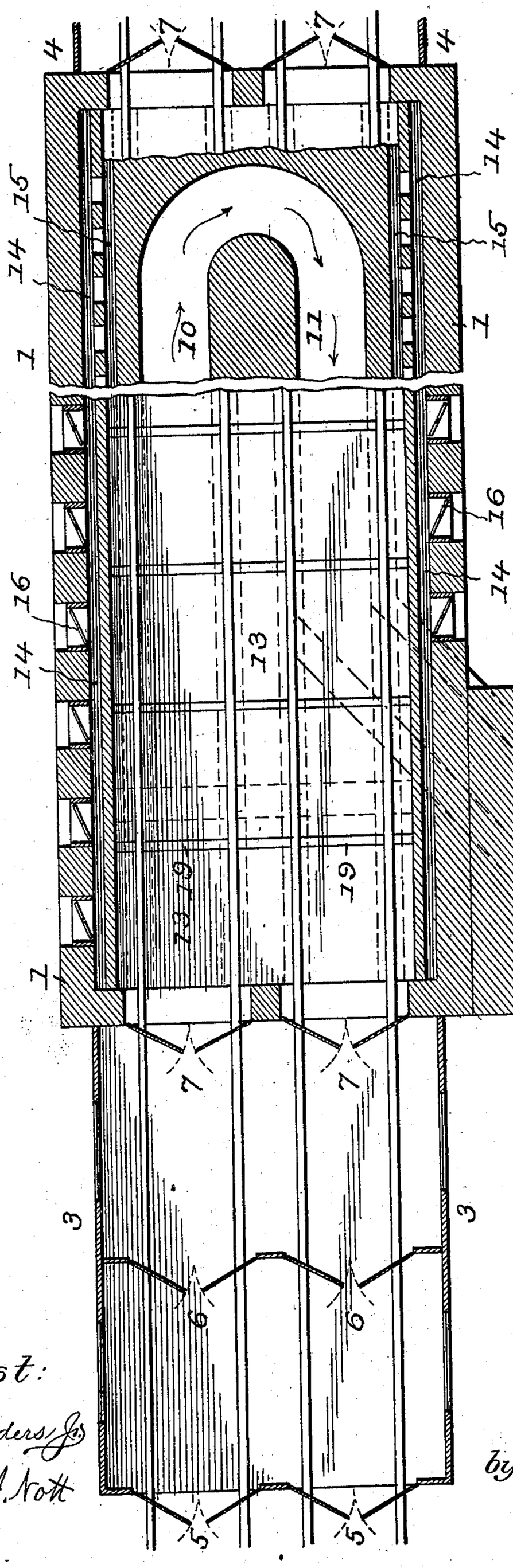

Fig. 2.

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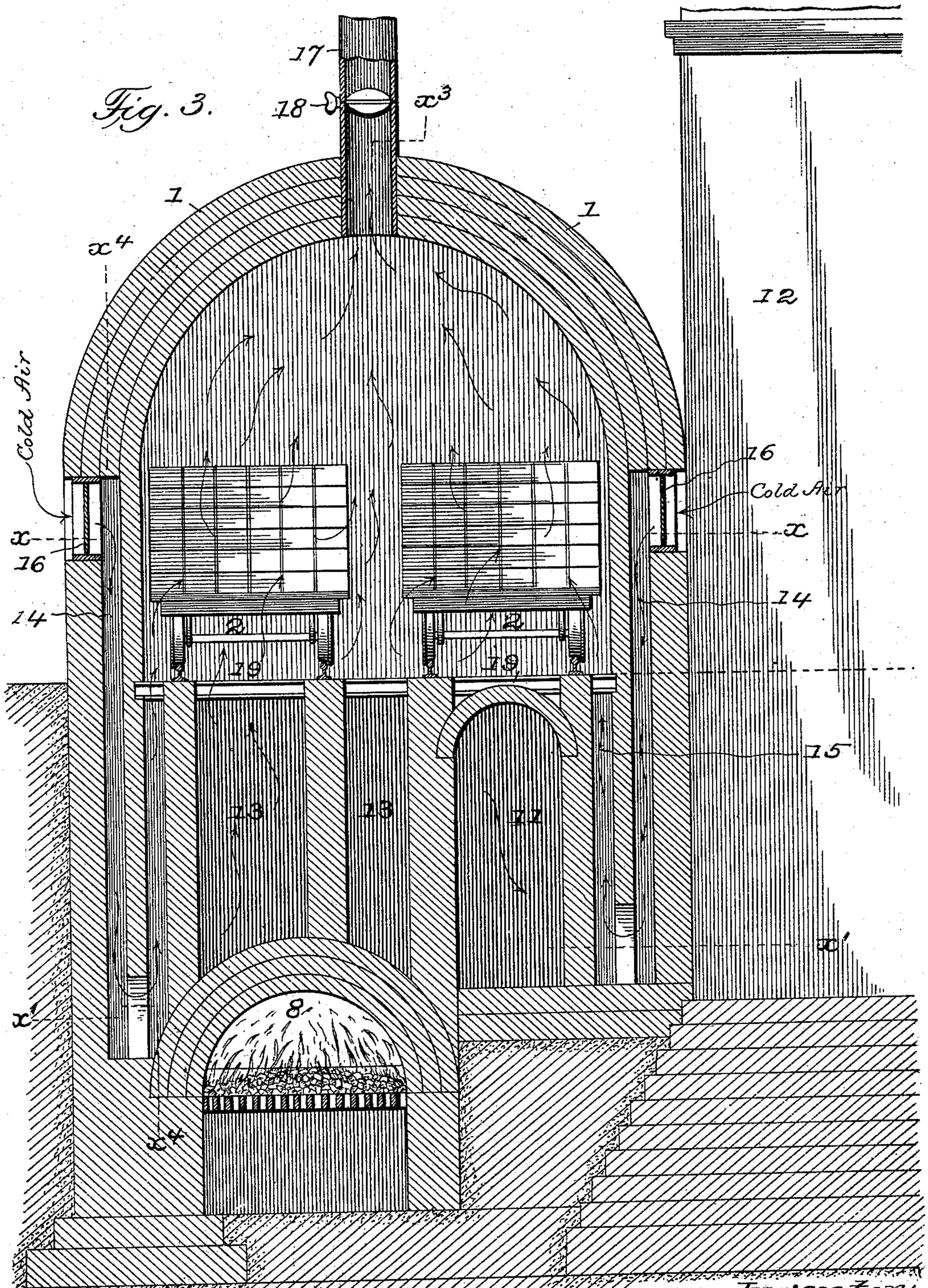
Fig. 3.



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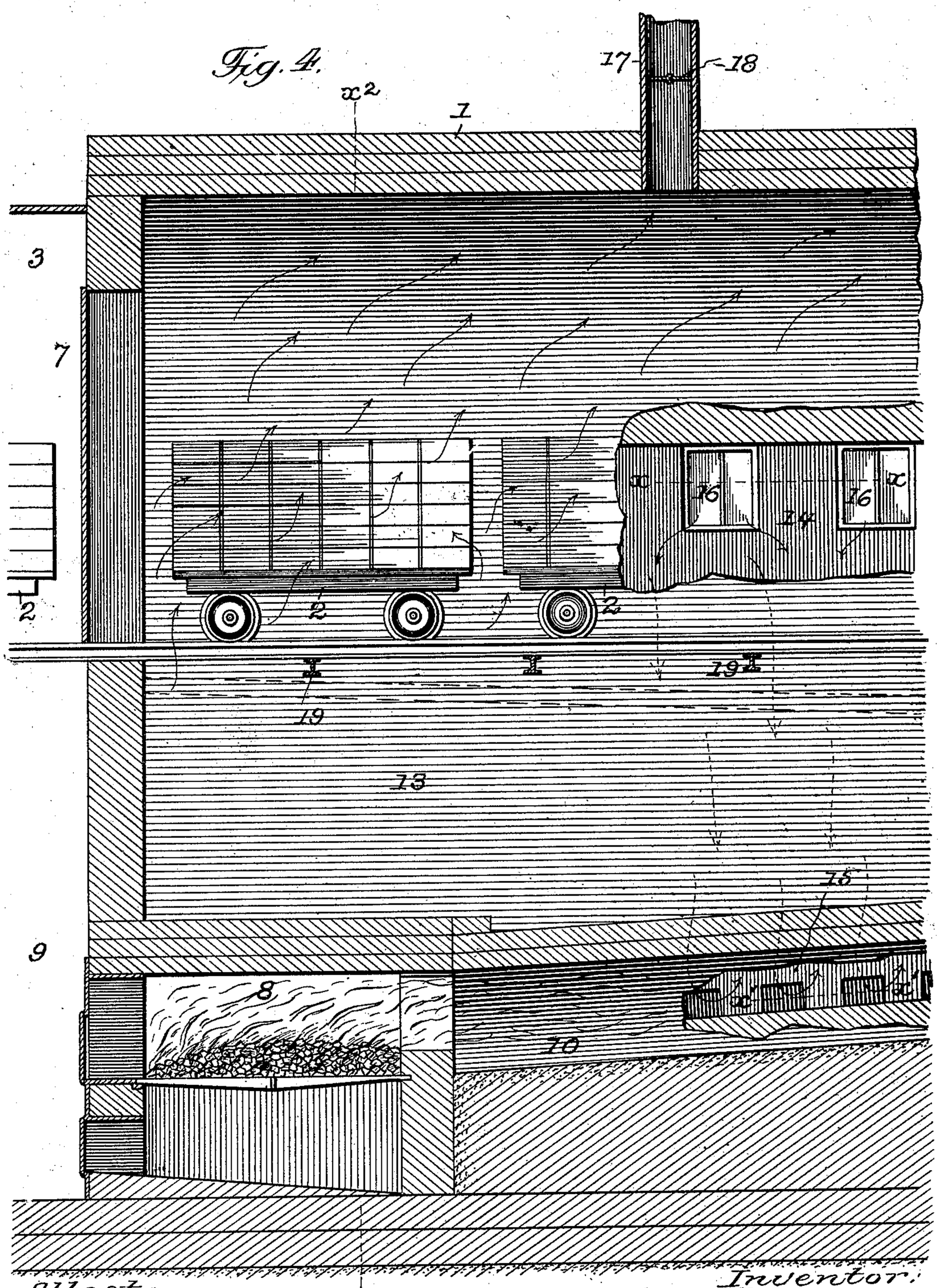
(No Model.) 4 Sheets—Sheet 4.

Fig. 4.



Attest:
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Inventor:
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UNITED STATES PATENT OFFICE.

GEORGE E. LINK, OF CHICAGO, ILLINOIS.

BRICK-DRYING OVEN.

SPECIFICATION forming part of Letters Patent No. 669,994, dated March 19, 1901.

Application filed April 25, 1900. Serial No. 14,315. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. LINK, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brick-Drying Ovens, of which the following is a specification.

The present invention relates to that class of continuous brick-drying ovens or kilns in which the green bricks, loosely stacked upon suitable cars, are successively moved through the drying-chamber and in a movement from one end to the other of said chamber the green bricks are exposed to a heating and drying operation to remove the excess of moisture, so that such bricks as they leave the drying-chamber will be in proper condition for the firing or burning kiln or clamp.

The object of the present improvement is to provide a simple, durable, and efficient construction of a brick-drying oven in which the operation of drying is conducted in a continuous and very economical manner, all as will hereinafter more fully appear and be more particularly set forth in the claims.

I attain such object by the construction and arrangement of parts illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view illustrating the general outward arrangement of the present brick-drying oven; Fig. 2, a horizontal section taken mainly on line $x\,x$ and partly on line $x'\,x'$, Figs. 3 and 4; Fig. 3, an enlarged transverse sectional elevation at line $x^2\,x^2$, Fig. 4; and Fig. 4, an enlarged detail longitudinal section, mainly on line $x^3\,x^3$ and partly on line $x^4\,x^4$, Fig. 3.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents an elongated arched-top oven or tunnel of any required length and preferably of a width capable of containing two parallel sets of tracks, upon which move the two sets of carrying cars or trucks 2, upon which the green bricks are stacked in the usual spaced condition best adapted to permit rapid drying.

At the respective ends of the tunnel or oven 1 are arranged the entrance and exit vestibules 3 and 4 for the entrance and exit of the brick-carrying cars 2 in the continuous-drying operation of the present apparatus and with the escape of a minimum amount of heat from the interior of the drying-chamber of the tunnel or oven 1. With a view to effect the greatest amount of economy in the above respect each of said vestibules is provided with an outer set of doors 5, an intermediate set of doors 6, and an inner set of doors 7, such sets of doors being spaced apart, so that when closed they will divide the vestibule into intermediate closed chambers, which in the case of the inlet-vestibule 3 are adapted to impart an initial drying or heating effect to the contained green brick previous to the main drying operation in the main-oven chamber. Such initial heating or drying operation is effected by the leakage of heat from the main drying-chamber through the different doors above described and during the opening and closing thereof in the operation of introducing a fresh car-load of bricks and in imparting a forward step to car-loads previously introduced. In the case of the exit-vestibule 4 the dried bricks will be exposed to a graduated cooling or annealing effect previous to their final removal to the burning kiln or clamp and which graduated cooling effect or action will be due to a leakage of heat from the main drying-chamber as the vestibule-doors are opened and closed to permit a step-forward movement of the cars of brick.

8 is the heating-furnace, of any usual and approved construction, arranged beneath the floor of the main drying-oven and preferably to one side of the median line of said oven, as shown in Fig. 3.

9 is the furnace firing-pit located in front of the furnace 8 for convenience in firing and stoking the same.

10 is a longitudinal heating-flue communicating at one end with the heating-furnace 9 and extending lengthwise of the main drying-oven immediately beneath one of the sets of tracks 2 and connecting at its far end with the far end of a longitudinal return-flue 11, that also extends lengthwise of the main drying-oven and beneath the other set of tracks 2 and discharging into a vertical smoke-stack or chimney 12 of the drying-oven, as illustrated in Figs. 2 and 3.

In my preferred construction the flues 10

and 11 will be of an arched-top formation, with a gradual incline or ascent from the furnace 8 to the smoke-stack 12.

13 represents intermediate chambers between the arched tops of the flues 10 and 11, that receive the heat radiating from the walls of said flues and conduct the same up into the main drying-chamber.

14 is a longitudinal series of outer cold-air ducts or passages formed in each of the side walls of the oven or tunnel and extending from near the top of said walls to near the bottom thereof and at such lower point connecting with the longitudinal series of inner hot-air ducts or passages 15, that extend up vertically and discharge into the lower portion of the main drying-chamber, as shown in Fig. 3.

With the above-described arrangement of hot-air ducts or passages 14 and 15 dependence is placed upon the heat imparted by the furnace and the heating-flues 10 and 11 to the different walls of the oven or tunnel and in which such air-passages 14 and 15 are formed to in turn impart the required amount of heat to the air passing through the said ducts 14 and 15 into the main drying-chamber to effect the main drying action of the present apparatus.

16 represents individual dampers arranged in the series of cold-air ducts 14 to afford means for individually controlling the volume of air passing through said ducts.

17 represents a longitudinal series of ventilating chimneys or outlets connecting at intervals with the crown of the oven-arch and adapted to carry off the heated and moisture-laden air therefrom in the practical operation of the apparatus.

With the present arrangement of the longitudinal series of ventilating-chimneys 17 and the longitudinal series of air-heating ducts 14 15 in the side walls of the oven, as shown, the draft of such ventilating-chimneys is adapted to cause a very complete and perfect circulation of the heated air throughout the whole interior of the drying-oven, and in so doing cause a very effective bombardment of the contained green brick by such heated air and effect a thorough, rapid, and economical drying of such brick.

18 represents individual dampers arranged in the series of chimneys or outlets 17 and adapted to individually control the draft as well as the discharge of moisture-laden air from the main drying-chamber through such series of chimneys or outlets.

19 represents transverse rails tying the different lower walls of the oven or tunnel together and constituting the open floor of the main drying-chamber.

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

1. In a brick-drying oven, the combination with an elongated drying-oven having entrance and exit doors at opposite ends and a furnace for heating the same, of a heating-flue extending longitudinally beneath the floor of the oven and connecting with the furnace, a return-flue connecting with the far end of the flue aforesaid, and a stack or chimney connecting with the return-flue, said flues being formed with a gradual incline or ascent from the furnace to the stack, substantially as set forth.

2. In a brick-drying oven, the combination with an elongated drying-oven having entrance and exit doors at opposite ends and a furnace for heating the same, of a heating-flue extending longitudinally beneath the floor of the oven and connecting with the furnace, a return-flue connecting with the far end of the flue aforesaid, a stack or chimney connecting with the return-flue, said flues having arched tops, and a series of heating-chambers intermediate of the flues and the main drying-chamber, substantially as set forth.

3. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a series of air-heating ducts formed in a side wall of the drying-oven, each air-duct comprising a passage communicating at one end with the atmosphere near the upper end of the oven-wall and at the other end with the bottom portion of the drying-chamber and consisting of inner and outer branch passages connected together at bottom, substantially as set forth.

4. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a series of air-heating ducts formed in a side wall of the drying-oven, each air-duct comprising a passage communicating at one end with the atmosphere near the upper end of the oven-wall and at the other end with the bottom portion of the drying-chamber, and consisting of inner and outer branch passages connected together at bottom, and a series of dampers for individually regulating said air-ducts, substantially as set forth.

5. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a longitudinal series of air-heating ducts formed in the side walls of the drying-oven and in the walls of the heating furnace and flues, and a centrally-arranged longitudinal series of ventilating-chimneys connected at intervals with the top of the oven-chamber, and means for controlling the individual action of such ventilating-chimneys, substantially as set forth.

6. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a longitudinal series of air-heating ducts formed in each side wall of the drying-oven and in the walls of the heating furnace and flues, means for individually controlling said air-ducts, and a centrally-arranged longitudinal series of ventilating-chimneys connected at intervals with the top of the oven-chamber, substantially as set forth.

7. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a longitudinal series of air-heating ducts formed in each side wall of the drying-oven and in the walls of the heating furnace and flues, means for individually controlling said air-ducts, a centrally-arranged longitudinal series of ventilating-chimneys connected at intervals with the top of the oven-chamber, and means for controlling the individual action of such ventilating-chimneys, substantially as set forth.

8. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a series of air-heating ducts formed in a side wall of the drying-oven, each air-duct comprising a passage communicating at one end with the atmosphere near the upper end of the oven-wall and at the other end with the bottom portion of the drying-chamber and consisting of inner and outer branch passages connected together at bottom, a series of stacks or outlets in the top of the main chamber, and means for controlling the action of such ducts and outlets, substantially as set forth.

9. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a series of air-heating ducts formed in a side wall of the drying-oven, each air-duct comprising a passage communicating at one end with the atmosphere near the upper end of the oven-wall and at the other end with the bottom portion of the drying-chamber and consisting of inner and outer branch passages connected together at bottom, a series of stacks or outlets in the top of the main chamber, and a series of dampers for individually regulating said outlets, substantially as set forth.

10. In a brick-drying oven, the combination with an elongated drying oven or tunnel and its heating furnace and flues, of a series of air-heating ducts formed in a side wall of the drying-oven, each air-duct comprising a passage communicating at one end with the atmosphere near the upper end of the oven-wall and at the other end with the bottom portion of the drying-chamber and consisting of inner and outer branch passages connected together at bottom, a series of dampers for individually regulating said air-ducts, a series of stacks or outlets in the top of the main chamber, and a series of dampers for individually regulating said outlets, substantially as set forth.

Signed by me at Chicago, Illinois, this 9th day of April, 1900.

GEORGE E. LINK.

Witnesses:
ROBERT BURNS,
HENRY A. NOTT.