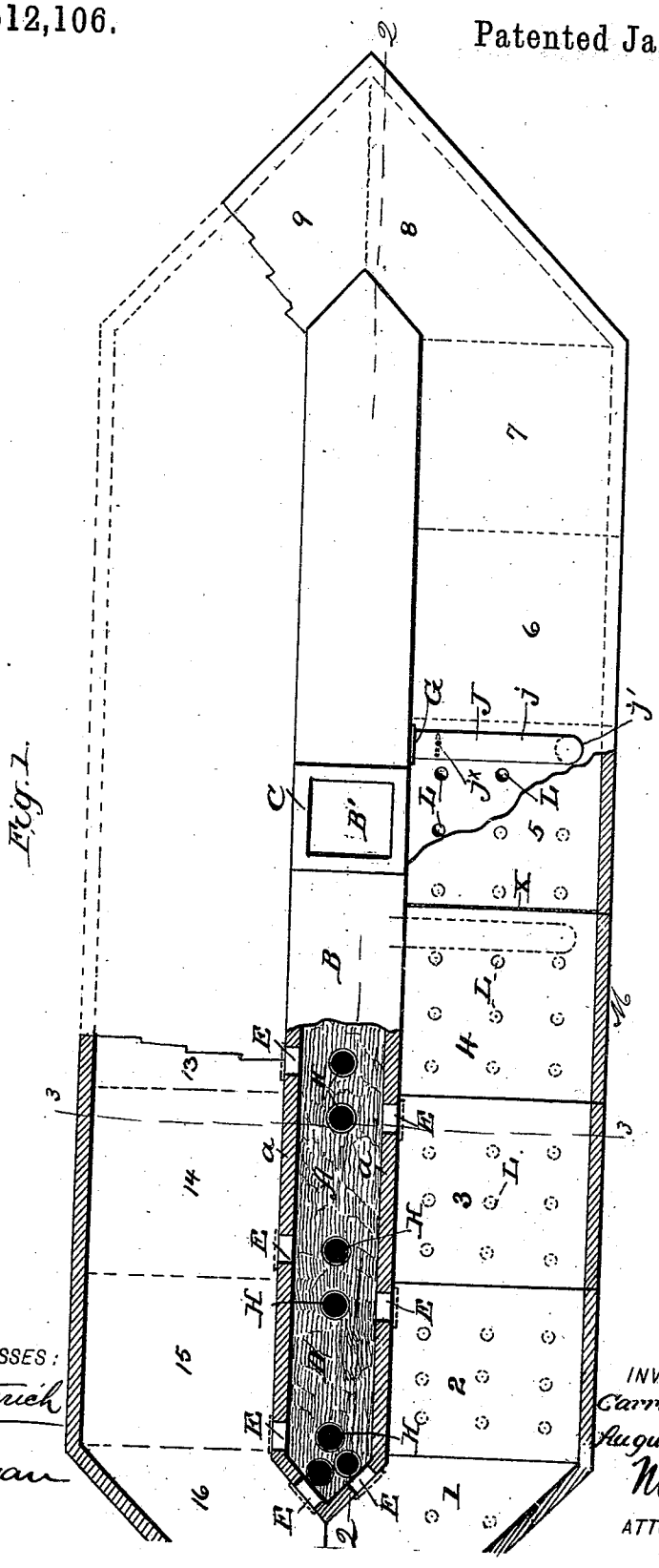
(No Model.)

2 Sheets—Sheet 1.

C. FORRESTER & A. H. DONECKEN.

BRICK KILN.

No. 512,106. Patented Jan. 2, 1894.



THE NATIONAL LITHOGRAPHING COMPANY,
WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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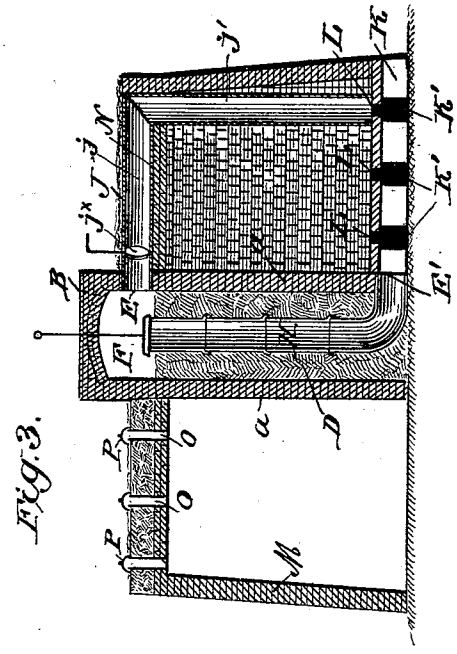

Fig. 3.

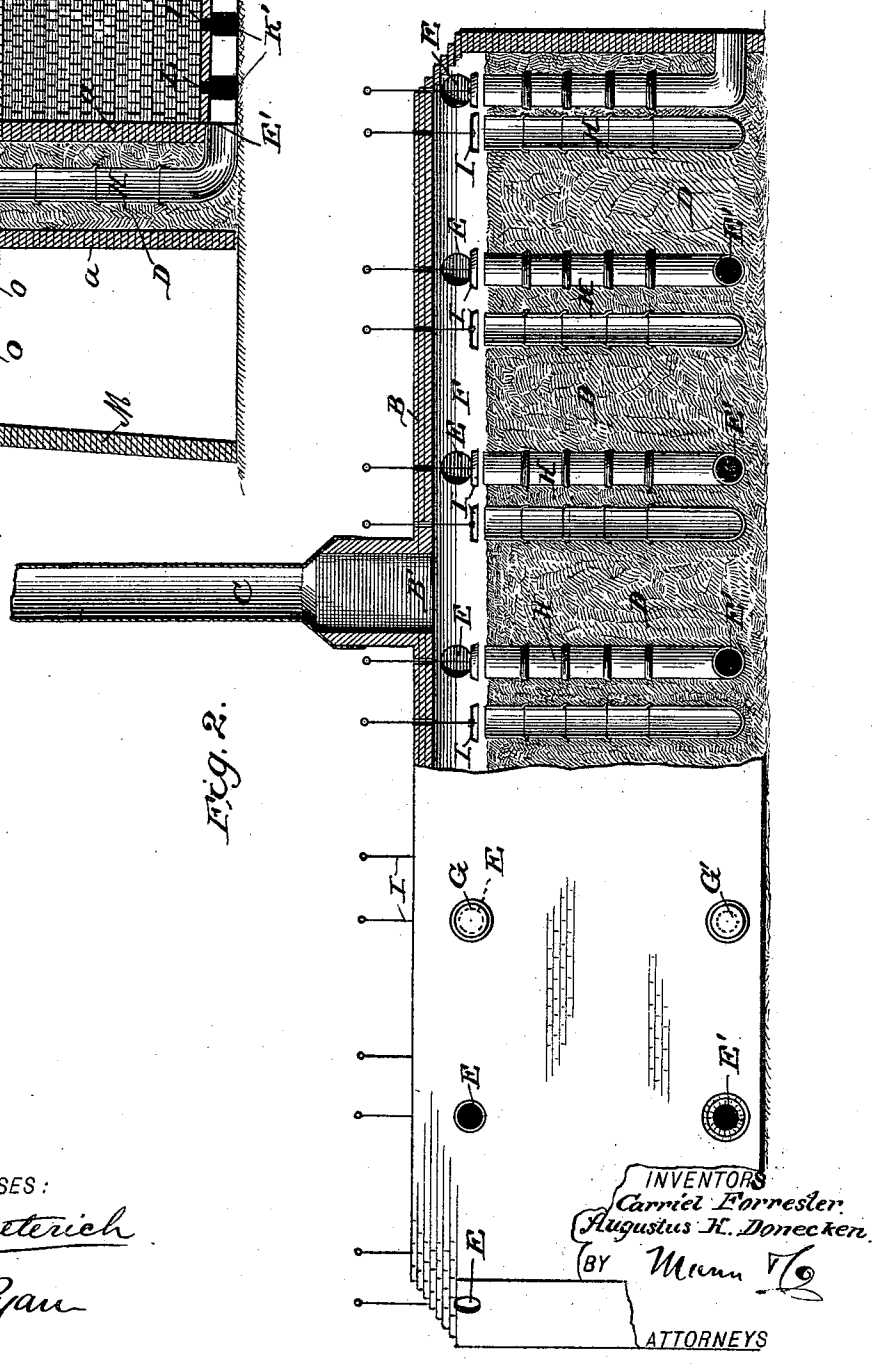

Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

CARRIEL FORRESTER AND AUGUSTUS H. DONECKEN, OF OMAHA, NEBRASKA, ASSIGNORS OF ONE-THIRD TO JOHN H. THISSEN, OF SAME PLACE.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 512,106, dated January 2, 1894.

Application filed April 1, 1893. Serial No. 468,692. (No model.)

To all whom it may concern:

Be it known that we, CARRIEL FORRESTER and AUGUSTUS H. DONECKEN, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Brick-Kilns, of which the following is a specification.

The object of our invention is to provide a brick kiln, which will be continuous in operation and very simple and economical in its construction.

It has also for its object to provide a kiln in which interchangeable parts are employed in connection with a central permanent part, and arranged in such a manner, that as one section of the kiln has been burned and cooled, and the bricks are removed such parts can be moved forward to form a new or green section, while the intermediate section or sections are firing.

With these and other objects in view, all of which will hereinafter be referred to, our invention consists in certain details of construction and novel arrangement of parts, all of which will hereinafter be described and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a diagrammatic plan view illustrating the manner in which our improved kiln appears when arranged ready for operation. Fig. 2 is a sectional side elevation of the same on the line 2—2 Fig. 1. Fig. 3 is a transverse section of the same on the line 3—3 Fig. 1.

In the practical construction of our kiln, we provide a permanent central longitudinal smoke chamber A, which has tapered ends, and is formed by the parallel walls *a a*, which extend from the ground up and have their upper ends connected by the crown wall B, which has a central opening B′ with which the stack flue C connects as shown. This flue chamber has a filling of earth D its entire length which extends up to a point just below a series of lateral flue openings E, whereby a longitudinal stack flue is formed, as shown at F, with which the flue openings E communicate, and which openings, when not in use in the manner hereinafter stated, are closed by removable caps G. See Fig. 2.

It should be stated that in practice the central smoke flue has a certain number of flue openings E, and each of such openings is adapted to be used in connection with one chamber or section of the kiln, and such smoke chamber has a series of vertical flues H, one for each kiln section, which consists of sheet metal pipe sections built in the dirt filling D, their upper ends opening into the stack flue F, while their lower ends extend through a series of flue openings E′ at the bottom of the side walls *a a* which openings are held closed by caps G′ when not in use as will presently appear.

I indicates dampers or caps, operated from the top of the kiln, and fitted over the tops of the flues H as most clearly shown in Fig. 3.

1—2—3—4 indicate what we term the first sections of our kiln, each of which represents, as it were, an independent burning section, and each is formed as follows: Projected from the flue openings E are flue sections J, each of which has a horizontal portion *j* which fits in the opening E of its respective section after its cap G is removed, and which has a damper $j^{\times}$ as shown. This section projects outward a certain distance, which depends upon the capacity desired, and has a downwardly extending member *j′* which ends at a point about eighteen inches above the ground. These flues J are usually set while the green bricks are being assembled. Old fashioned arches K are built by the green brick, which open up a communication between the flues J and H, the several sections 1—2—3 and 4 having their arches K also connected by longitudinal flues K′ with which and the flues K communicate the floor openings L L as shown. After the green bricks in each section are assembled, an outer or casing wall M is built, which extends above the top of the green brick, which top extends to a point below the horizontal sections of the detachable flues J. A brick platting N formed of two courses of burnt brick is then laid on the top of the green bricks, and on such platting is laid a layer of dirt which surrounds the horizontal sections of the flues J. Through this dirt filling and platting extend fire holes O, arranged at points intermediate the flues J, which have removable caps P as shown clearly in Fig. 3.

One of the main objects of this invention is to provide for a continuous operation of the kiln. By referring now to Fig. 1, the manner

in which such operation is accomplished will be best understood. In such view we have shown the permanent part of the kiln so constructed as to be capable of operation with sixteen separate kiln sections, it being obvious however that it may be constructed for a greater or less number.

The setting of the bricks is began in division 1, and then successfully carried on to form divisions 2, 3 and 4, the caps over the openings E E′ in the fourth section of the central wall *a a* having been first removed to allow the flue J to connect therewith. After the first four divisions have been set, platted and the casing wall built, and dirt put on the top, a paper partition X is applied to the end of division 4 and fire lighted in the arches under division 1, the draft in such division and divisions 2 and 3 being closed, and the flue J in the fourth division being opened. The heat thus generated is consequently drawn from the fire through the divisions 1, 2, 3 and 4 before it escapes to the smoke stack, thereby giving the bricks ahead of the fire the benefit of the same. Firing with wood from below is continued until the bricks in division 1 become so hot as to ignite coal put in at the top. Firing from below is then stopped in division No. 1 and continued from the top. During this operation the setting of the brick is begun in division 5, and is ready to be burned, so soon as division 1 has finished burning. The draft flue J is then closed in division 4 and opened in division 5, and firing begun in division 2, the burning operation in such division being repeated same as in division 1, divisions 6, 7 and 8 and so on being then successively burned.

It should be stated that when the first four divisions are set at the starting, the kiln flue sections J are not needed in the first three divisions, as the draft to the smoke stack at the start is through division 4, a second flue J being used as division 5 is set. When such division 5 is working the flue in division 4 is pulled out and placed in division 6, and when No. 6 is working flue in No. 5 is pulled out and placed in division 7 and so on. It will thus be seen that two of the flues J will suffice for the operation of the kiln. When the bricks in division 1 are cold enough to be removed they are loaded on the wagon, the casing wall platting and all. In due time divisions 2, 3, 4 and so on will follow suit, making room for new divisions, after the sixteenth division has been reached.

By arranging the permanent flues H and the detachable flues J in the manner stated and providing them with dampers as shown, the draft can be regulated right and left through the bricks at will, giving an even distribution of heat all over.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a brick kiln, the combination of a permanent smoke chamber having a longitudinal stack flue, and draft openings at its top and bottom, a kiln section formed of an outer casing, said section having fire openings at its bottom, communicating with the lower draft openings in the smoke chamber, and a removable flue section communicating at its upper end with one of the upper draft openings of the smoke chamber, and at its bottom with one of the fire openings, all substantially as shown and described.

2. An improved kiln, comprising a main smoke chamber having a series of draft openings in its upper end, said openings having removable caps, a series of flues H extending down and projected at their lower ends through the bottom of such side walls, and having removable caps at such end, the removable flues J, adapted to be detachably connected at their upper ends with any one of the said upper draft openings, the stack and one or more of the burning or kiln sections all arranged substantially as shown and described.

3. In a brick kiln, the combination with the main chamber A, having a longitudinal smoke flue at its top, the stack opening therefrom, the openings E having removable caps, and the flues H having dampers, at their top ends, their lower ends opening through the main chamber walls and provided with removable caps, of a kiln section having fire chambers at its bottom opening at one end into the flue H, an outer casing wall, a crown wall having fire openings and a removable flue J having a horizontal portion provided with a damper, connected with one of the upper draft openings E at one end, its opposite end terminating in a vertical section communicating with one of the fire chambers all substantially as shown and for the purposes described.

4. A brick kiln formed of a permanent central smoke chamber, having a series of openings E, in the upper end of the side walls, and a series of openings E′ in the lower ends of such walls, said openings having removable caps, a series of flues H extending from the smoke chamber down to discharge through the openings E′, said flues having dampers at their upper end and the stack connected to the smoke chamber, of one or more burning chambers, formed by the green brick, fire arches at the bottom thereof opening into the flues H and discharging into the body of the ware, an outer casing, a brick crown portion, and dirt filling on the top thereof, capped fire holes opening through such filling and crown portion, and the removable valved flue sections J held in the said burning chamber, and connected with any one of the openings E, their lower ends communicating with the fire arches, all arranged substantially in the manner shown and for the purpose described.

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F. C. MORGAN.