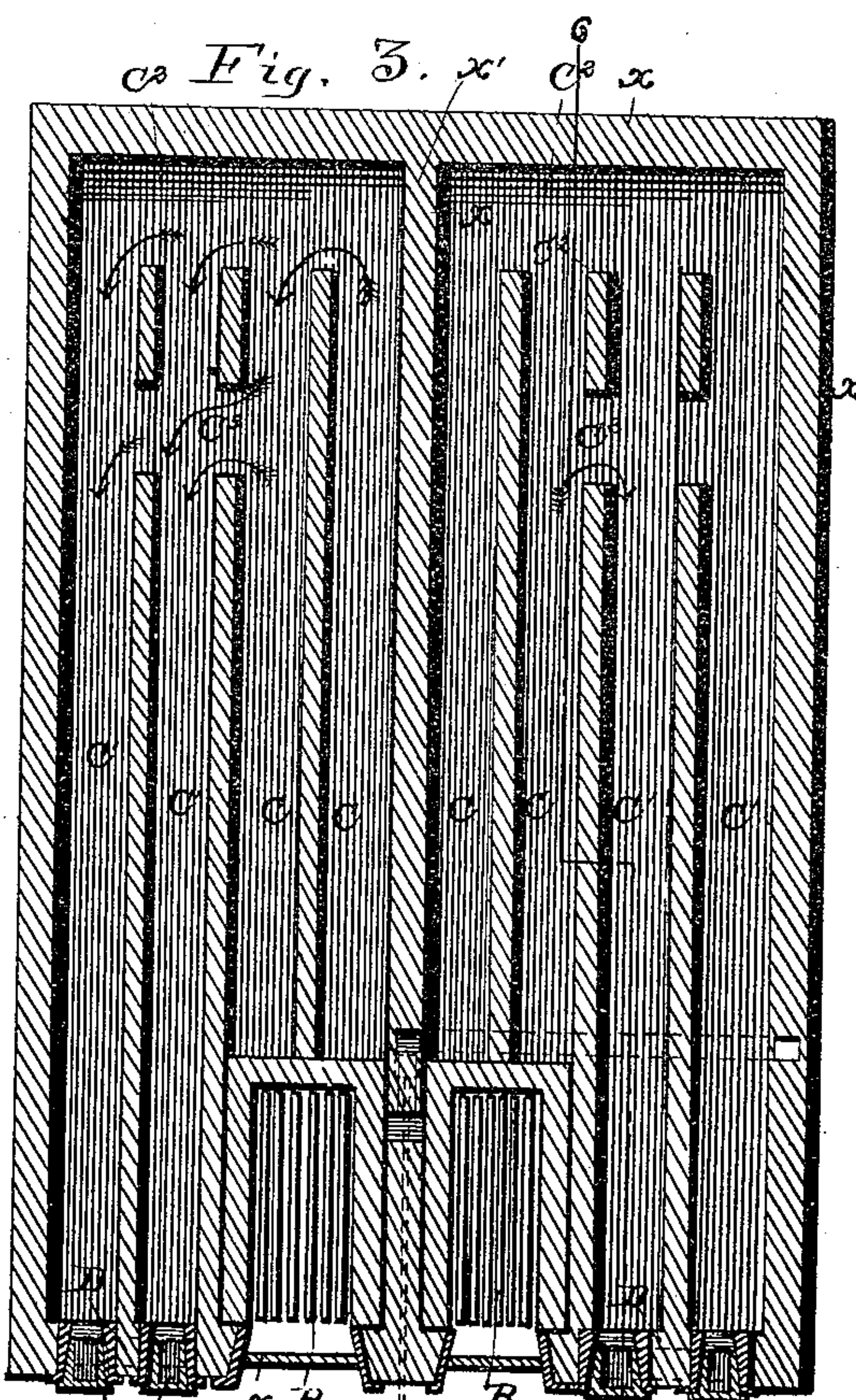
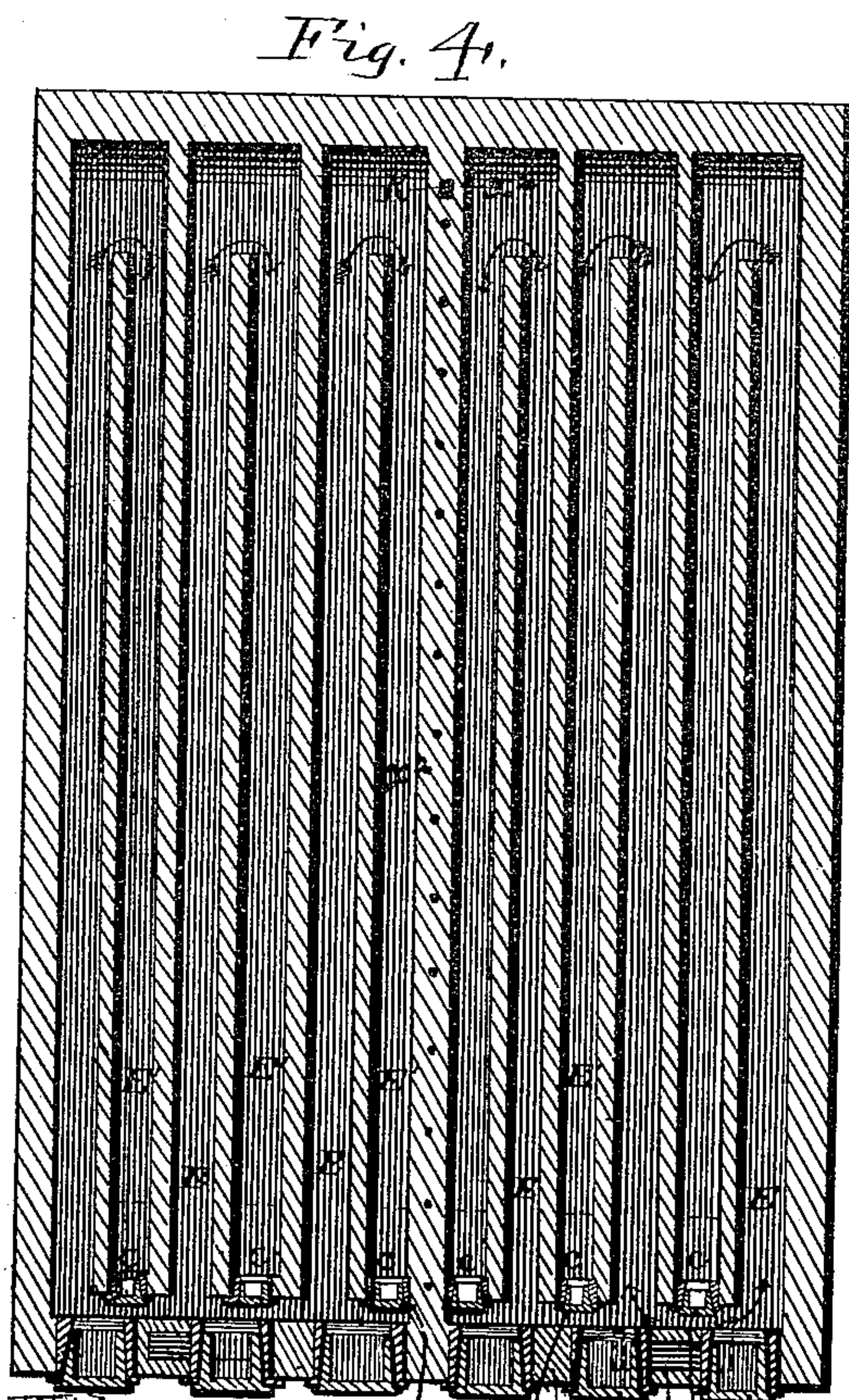
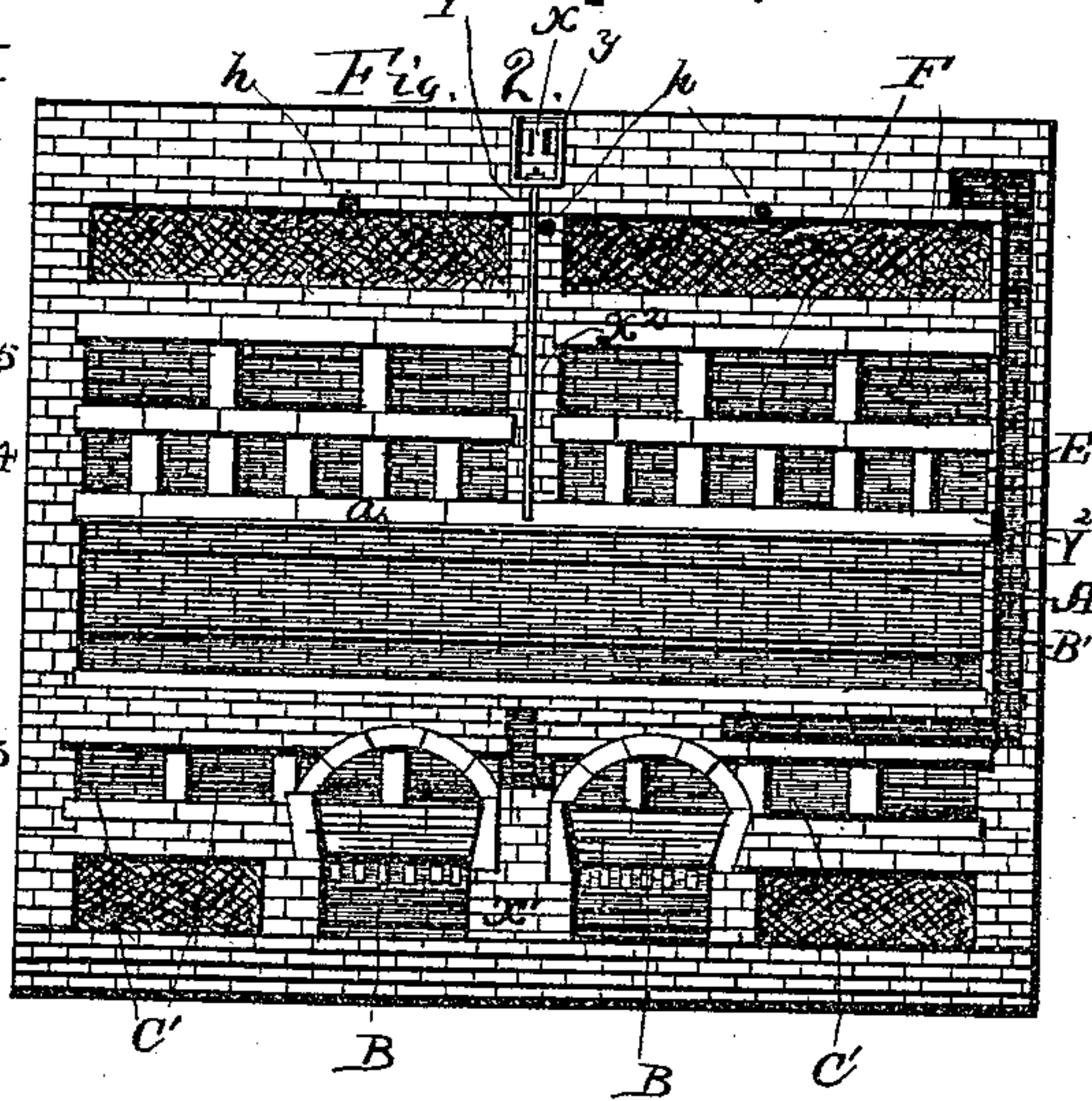
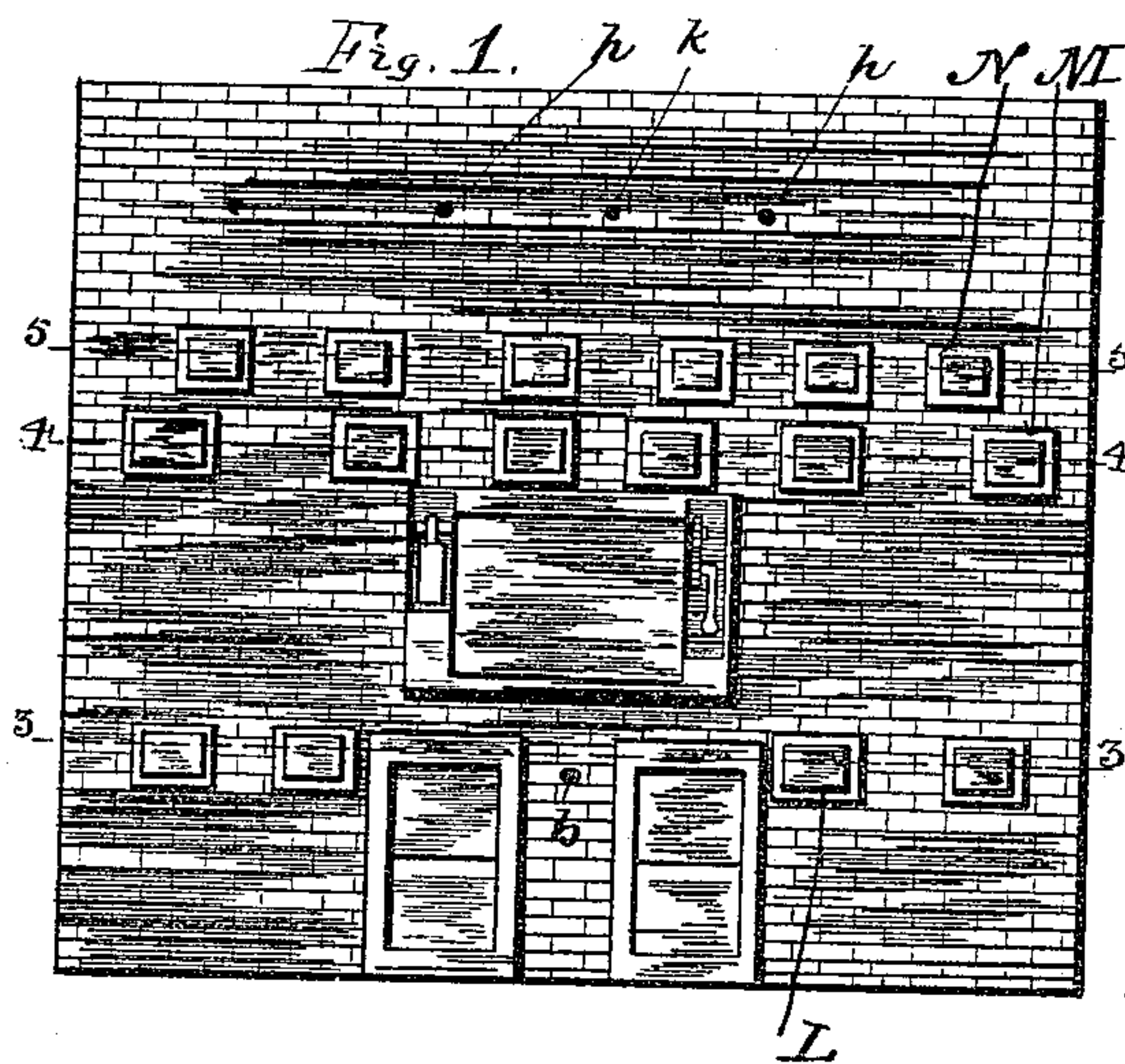


2 Sheets—Sheet 1.

No. 436,134.

Patented Sept. 9, 1890.



Witnesses M m  
E K Henderson  
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att'y.



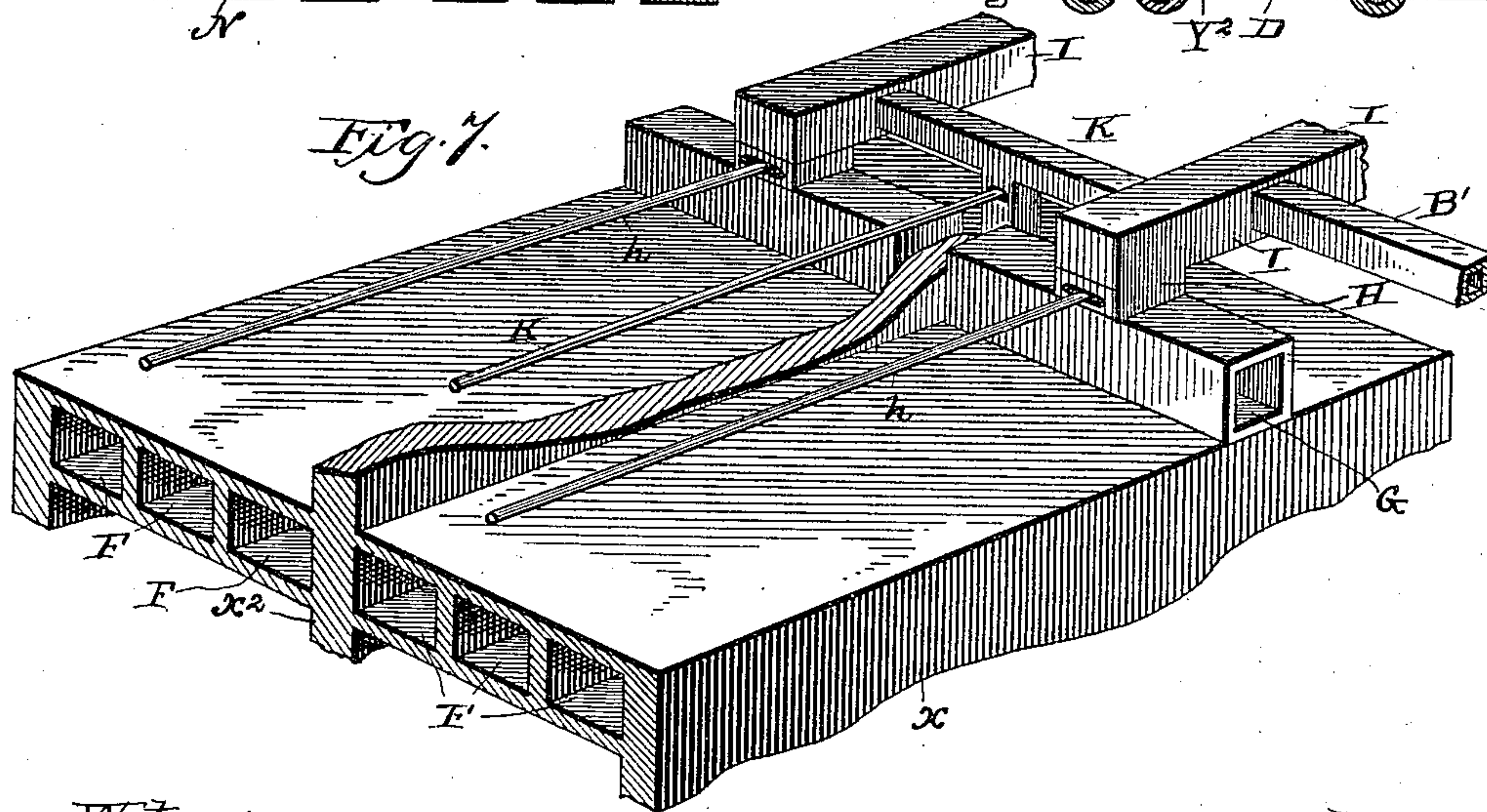
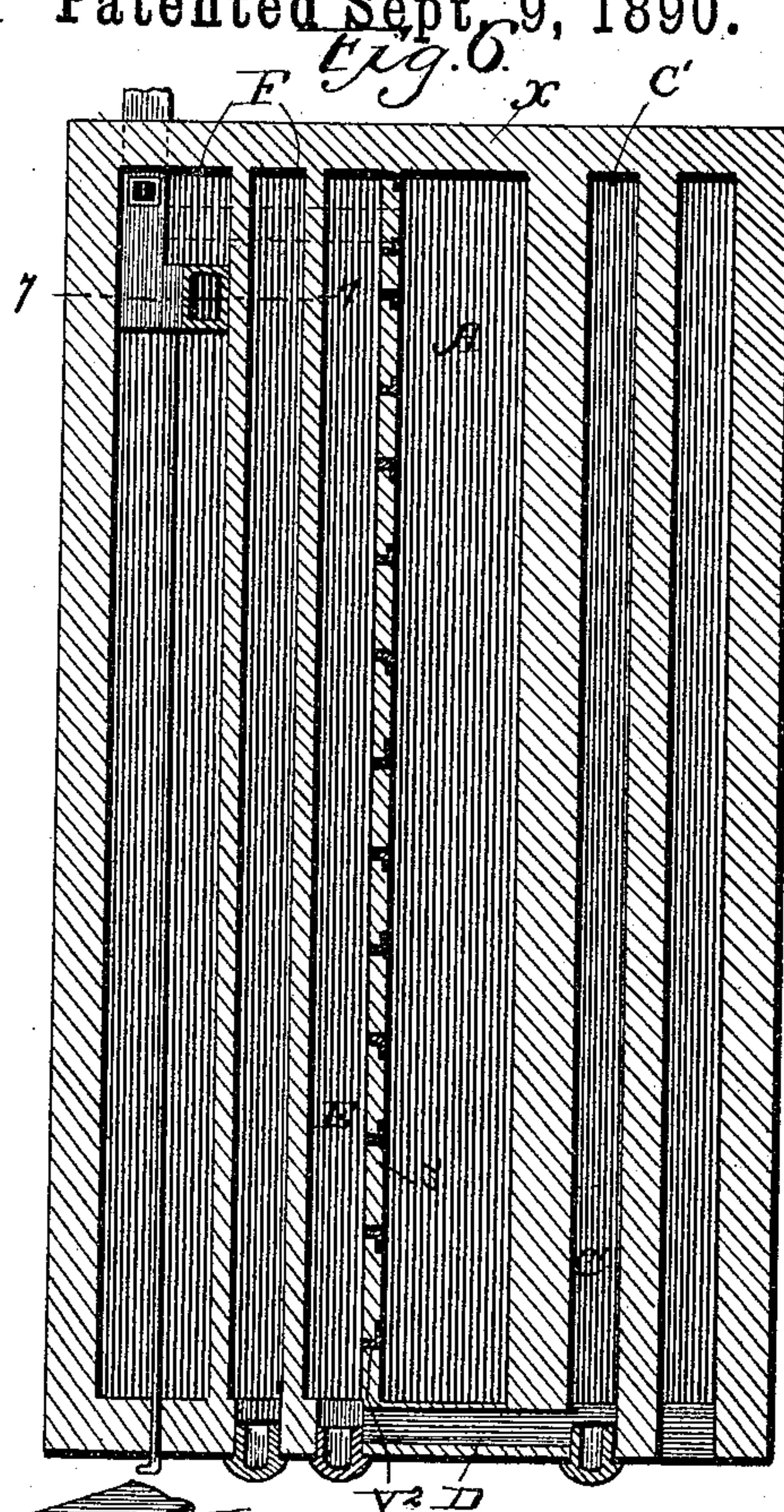
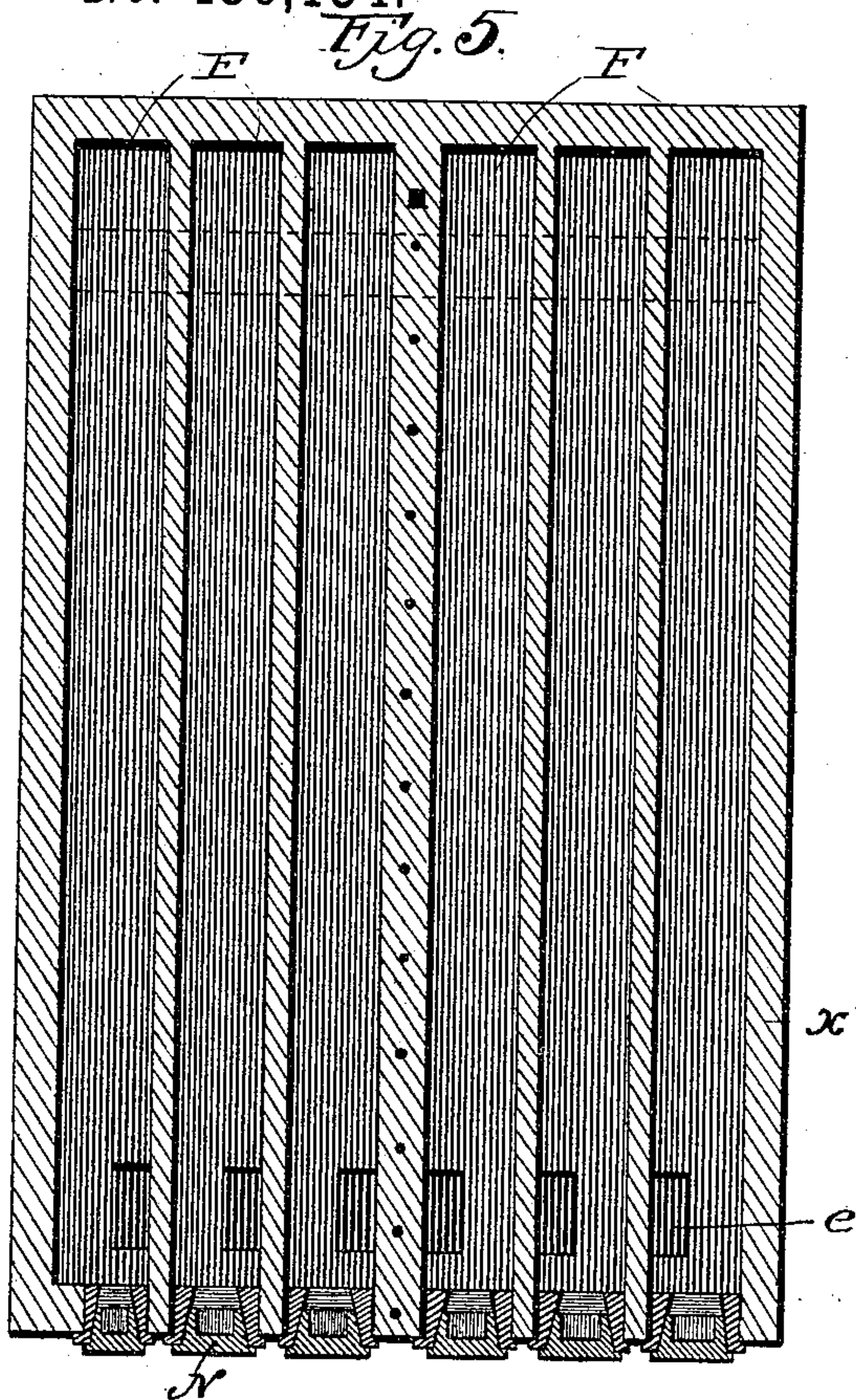
(No Model.)

2 Sheets—Sheet 2.

E. P. HILCHER.  
BAKER'S OVEN.

No. 436,134.

Patented Sept. 9, 1890.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

EDWARD P. HILCHER, OF CHICAGO, ILLINOIS.

## BAKER'S OVEN.

SPECIFICATION forming part of Letters Patent No. 436,134, dated September 9, 1890.

Application filed March 1, 1890. Serial No. 342,313. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD P. HILCHER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bakers' Ovens, of which the following is a specification.

The object of my invention is to obtain an oven in which an even and uniform heat can be secured, whereby articles placed in different parts of the oven will be baked in approximately the same time.

A further object of my invention is to obtain an oven in which the heat required may be more easily secured and maintained than in the ovens heretofore constructed.

I have illustrated my invention by the drawings accompanying and forming a part of this specification, in which—

Figure 1 is a front elevation of the oven. Fig. 2 is a cross-section of the oven on line 2 2 of Fig. 3. Fig. 3 is a plan view of the oven on the level indicated by line 3 3 of Fig. 1. Fig. 4 is a plan view on the level indicated by line 4 4 of Fig. 1. Fig. 5 is a plan view on line 5 5 of Fig. 1. Fig. 6 is a section on line 6 6 of Fig. 3, and Fig. 7 is a perspective of the several ways and flues indicated by the line 7 7 of Fig. 6.

Like letters refer to like parts throughout the several views.

X X are the external walls of the baker's oven constructed by me.

X' is a partition-wall extending from the base upon which the oven is built to the floor of the baking-chamber A, and from the front end wall of the oven to the rear end wall thereof.

X<sup>2</sup> is a vertical partition-wall also extending from the front end wall of the oven to the rear end wall, and from the roof of the baking-chamber A to the top of the oven.

Y is an I-shaped rail or girder extending from one of the external end walls of the oven to the other thereof and supported thereby.

Y' are suspension-rods secured at the upper ends thereof in strap y, which extends around the I-shaped girder Y and at the lower ends thereof attached to inverted-T rails Y<sup>2</sup>.

A is the baking-chamber of the oven. a is the roof thereof. Roof a consists of tiles or

brick laid upon and supported by the rails Y<sup>2</sup>. The partition-wall X<sup>2</sup> is built around the suspension-rods Y' upon this roof a.

B B are fire-pots, of which I construct two, one on each side of the partition X'.

B' is a flue extending from fire-pots B B a short distance vertically in the partition-wall X' to near the bottom of the baking-chamber A, thence horizontally to back of the fire-pots B B, and thence underneath the floor of the baking-chamber to one of the external side walls X of the oven, and thence in such side wall to the chimney of the building in which the oven is built.

b is a damper in smoke and heat flue B'. This flue B', as will be observed, forms a way extending directly from the fire-pots B B to the chimney when the damper b is open, and the purpose of this way may be, briefly stated, to afford a conduit in which the smoke and heat of the fire contained in the fire-pots may be taken from the oven without hindrance and without imparting much, if any, heat to the baking-chamber A. This way afforded by the flue B' is desirable in the building of a fire in the fire-pot, as well as when the baking-chamber A is sufficiently heated.

In the practical use of a baker's oven the articles forming a part of the "batch," so called, placed in the baking-chamber A are so placed therein at the rear end thereof before the articles are placed in the front end thereof, and also the door in the front of the baking-chamber and through which articles are inserted into the baking-chamber is occasionally opened during the progress of baking, and cold air is thereby admitted into the front end of the baking-chamber.

The object of my invention is to obtain an oven having a baking-chamber in which all the articles placed therein to be baked will be uniformly so baked, notwithstanding the manner and order of placing the articles therein, as described, and the occasional opening of the door of the baking-chamber; and to this end I have constructed the tortuous way, consisting of the several flues C C, extending horizontally, or nearly so, underneath the floor of the baking-chamber A to or near to the rear end wall of the oven, the return-flues C'



C' to one side of the flues C C communicating with the flues C C, and extending from such point of communication forward to the front end wall of the oven, vertical flues D D in the front end wall of the oven, such vertical flues communicating at their lower ends with flues C' C' and at their upper ends with flues E E, flues E E directly above the baking-chamber A and extending horizontally, or nearly so, backward to the rear end wall, and return-flues E' E' communicating with flues E and extending therefrom forward to near the front end wall, flues F F communicating with flues E' E' and extending backward above flues E E and E' E' horizontally, or nearly so, to cross-flues G G and communicating therewith, vertical flues H H communicating with cross-flues G G, respectively, and flues I I. Each of the flues I I communicates with the chimney, and thus a way is obtained through the several last above-described flues from the fire-pot to the chimney.

*h* is a damper in vertical flue H. By the use of damper *h* the way or conduit afforded by the several flues C, C', D, E, E', F, G, H, and I may be opened or closed. When the damper *h* is open, the smoke and other heated products of combustion in the fire-pots B B will extend backward through that one of the flues C C adjacent to partition X' to the rear end wall of the oven, and in that one of the flues C adjacent to flue C' nearly to the rear end wall, passing from flues C C through openings C<sup>2</sup> and C<sup>3</sup> into the flues C' C', and then returning to the front end of the oven through flues C' C'. From thence such smoke or other heated products of combustion will enter the vertical flue D and ascend to the flues E E E above the baking-oven, and thence extend horizontally, or nearly so, through such flues to the back of the oven. From flues E such smoke and other heated products of combustion pass into the return-flues E' E' E' and extend along such flues to near the front of the oven, from thence passing to openings *e e e* into flues F F F, respectively, and then passing through such flues F F to near the rear end of the oven, will pass therefrom into the cross horizontal flue G, and from flue G through vertical flue H into flue I, extending from the oven to the chimney.

It will be observed that I have illustrated flue B' as communicating with flue I above damper *h*, so that such flue B' forms a way for the smoke and other heated products of combustion from the fire-pot B independent of the damper *h*, such way so formed by flue B' being controlled by damper *b*. It will also be observed that the horizontal flues C adjacent to partition-walls X' extend to the rear end wall of the oven, at which point each of such flues C adjacent to the partition-walls X' communicates with the other of the flues C through opening C<sup>2</sup>, while between the others of the flues C and the flues C' adja-

cent thereto there are placed the openings C<sup>3</sup> in addition to the openings C<sup>2</sup>. This opening C<sup>3</sup> being nearer the front end of the oven, smoke or other heated products of combustion extending from the fire-pot B backward through such flue C is permitted to pass therefrom into the next adjacent return-flue C' before reaching the rear end of such flue C. The purpose of this construction of flues C and C' is twofold—first, to decrease the size of such flues from that which would be required if but one flue C were employed, thereby enabling a greater number of heat-units to be abstracted from the mass of smoke and other heated products of combustion passing through the flues C by such mass being brought in closer contact with the walls of the flues than it would be if there were but one flue C, and, secondly, to convey and guide a portion of the smoke and other heated products of combustion produced by the burning fuel in the fire-pot to the extreme rear end of the oven, while another portion thereof is permitted to return to the front end of the oven without having been conveyed to the extreme rear end thereof.

To afford means of escape of steam or other offensive matter contained or generated within the baking-chamber, flue K is constructed, extending from such baking-chamber to flue I, communicating therewith above damper *h*.

To clear the soot or other obstructions deposited in flue C therefrom, an ordinary scraper having a long handle attached thereto may be inserted in such flues C C at the rear of the fire-pot B and such obstructions drawn forward into the fire-pot.

To clear obstructions from flues C' C', access is obtained thereto through openings placed in the front end wall of the oven opposite to the ends of the flues C' C', respectively, such openings being closed, except when the flues are being cleaned, by the removable cover L. Flues D D may also be cleaned through these openings over which the cover L is placed. To remove obstructions from flues E E, openings are made in the front end wall of the oven opposite such flues, such openings being closed by removable covers M. Access to flues E' E' is obtained through the holes last described, which are closed by the removable covers M, and through the holes at the end of such flues E', which are ordinarily closed by removable covers *m*; and, further, to remove the obstructions in flues F, openings are made in the front end wall of the oven at the end of such flues and removable covers N placed thereover.

To remove obstructions from that portion of flue B' extending from partition-wall X' to the external side wall X, a hole is made in such external side wall and removable cover placed thereover. In the construction of my oven I prefer to extend the flue B' into that external side wall thereof away from contact with the walls of the building in which the oven is placed, in order to thus afford access



into the flue B' through the hole last described, which is closed by the removable cover.

The operation of my oven is as follows:

5 Dampers *b* and *h h* are all opened and a fire built in fire-pots B B. A direct way is afforded to flue B' for the smoke and other heated products of combustion to pass from such fire-pot to the chimney. This way is closed when  
10 the fire is well started by closing damper *b*, whereupon such smoke and other heated products of combustion extend backward in flues C toward the rear of the oven, passing from flues C into flues C' and extending  
15 through such flues C' forward to the front end of the oven, from thence extending through flues D upward into flues E E E, from thence to the rear of the oven and into flues E' E', and again forward to near the front of the  
20 oven, thence passing into flues F, G, H, and I, as hereinbefore described. When the oven has attained sufficient heat and it is desired to maintain such heat without increasing it, the damper *b* may be again opened, thus al-  
25 lowing the smoke and other heated products of combustion to pass from the fire-pot to the chimney through flue B'.

In an oven constructed substantially as herein described a uniform heat throughout  
30 the several parts thereof may be maintained, and thereby bread or other articles placed in the rear portion thereof are baked without burning when articles in the forward portion of such oven are sufficiently baked to be re-  
35 moved therefrom.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. A baker's oven having fire-pots therein  
40 placed underneath the baking-chamber thereof and a flue having a damper therein, such flue extending from the fire-pots to the external side walls of the oven to the chimney of the building in which the oven is placed, in  
45 combination with horizontal flues forming a way for the passage of smoke and extending from the fire-pot to the back part of the oven, return-flues adjacent thereto and communi-  
50 cating therewith extending to the front of the oven, a vertical flue communicating with and

extending from such horizontal return-flue underneath the baking-chamber to and communicating with horizontal flues above the baking-chamber extending from the front to the rear of such oven, return-flues communi- 55 cating with the last-named flues and extending to the front of the oven and there communicating with horizontal flues placed there- over and extending to the back part of the oven and there communicating with a horizontal 60 cross-flue, a vertical flue having a damper therein, and with the chimney of the building in which the oven is placed, substantially as described.

2. A baker's oven having fire-pots therein 65 placed underneath the baking-chamber thereof, horizontal flues forming a way for the passage of smoke and extending from the fire-pots, respectively, to the back part of the oven, return-flues adjacent thereto and communi- 70 cating therewith extending back to the front of the oven, a vertical flue communicating with and extending from such horizontal return-flue underneath the baking-chamber to and communicating with horizontal flues 75 above the baking-chamber extending from the front to the rear of such oven, return-flues communicating with the last-named flues and extending to the front of the oven and there communicating with horizontal flues placed 80 thereover extending to the back of the oven, a horizontal cross-flue communicating with the last-named flue and with a vertical flue having a damper therein, and a flue extending there- from to the chimney of the building in which 85 the oven is placed, in combination with removable covers placed in the front wall of the oven opposite the end of the horizontal flues extend- ing to the front and rear walls thereof, and re- movable covers placed at the end of the hori- 90 zontal flues extending nearly to the front wall of the oven, whereby upon removing such removable covers each and every one of such flues may be cleared of obstructions, substantially as described.

EDWARD P. HILCHER.

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