

No. 725,519.

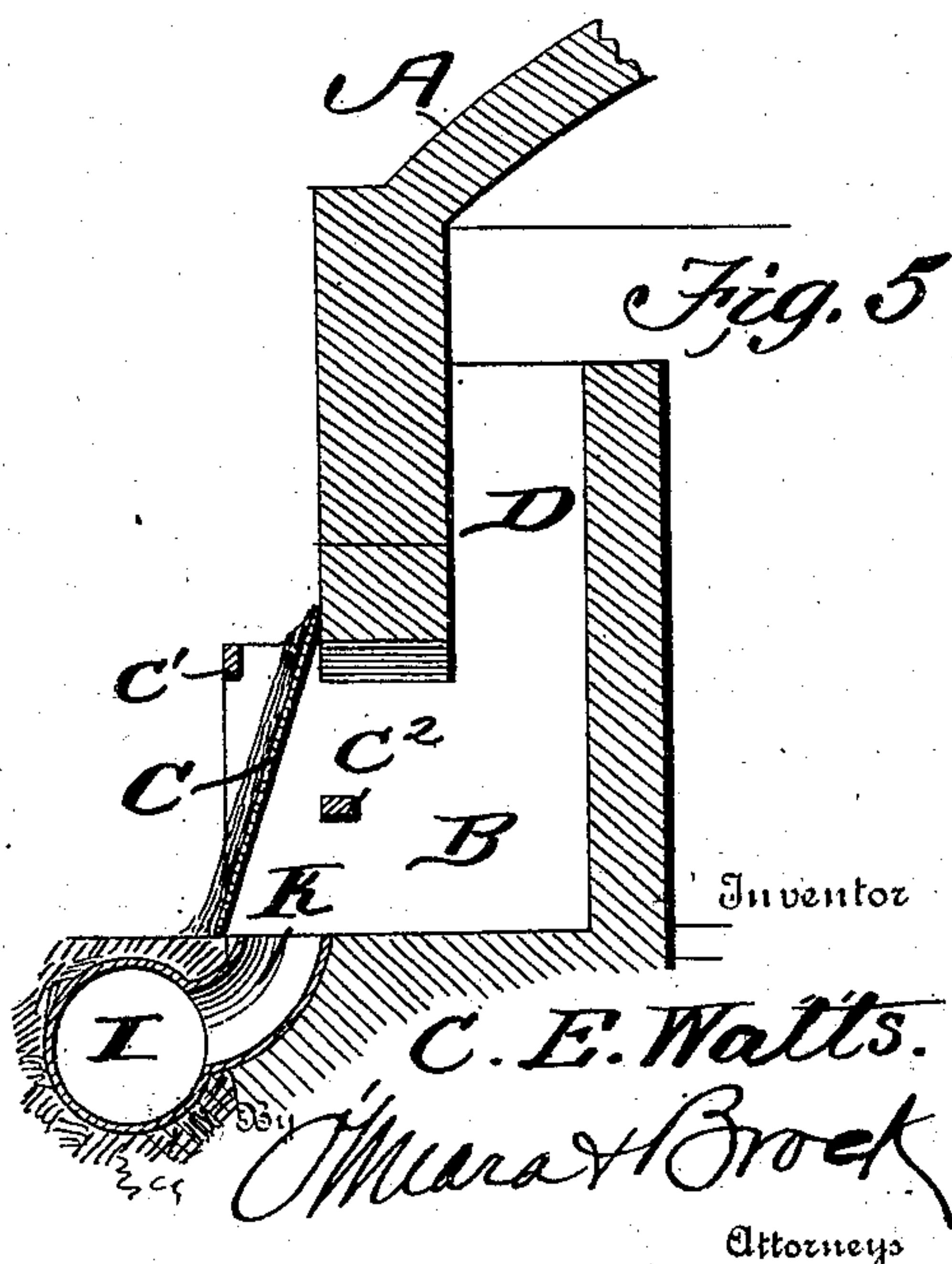
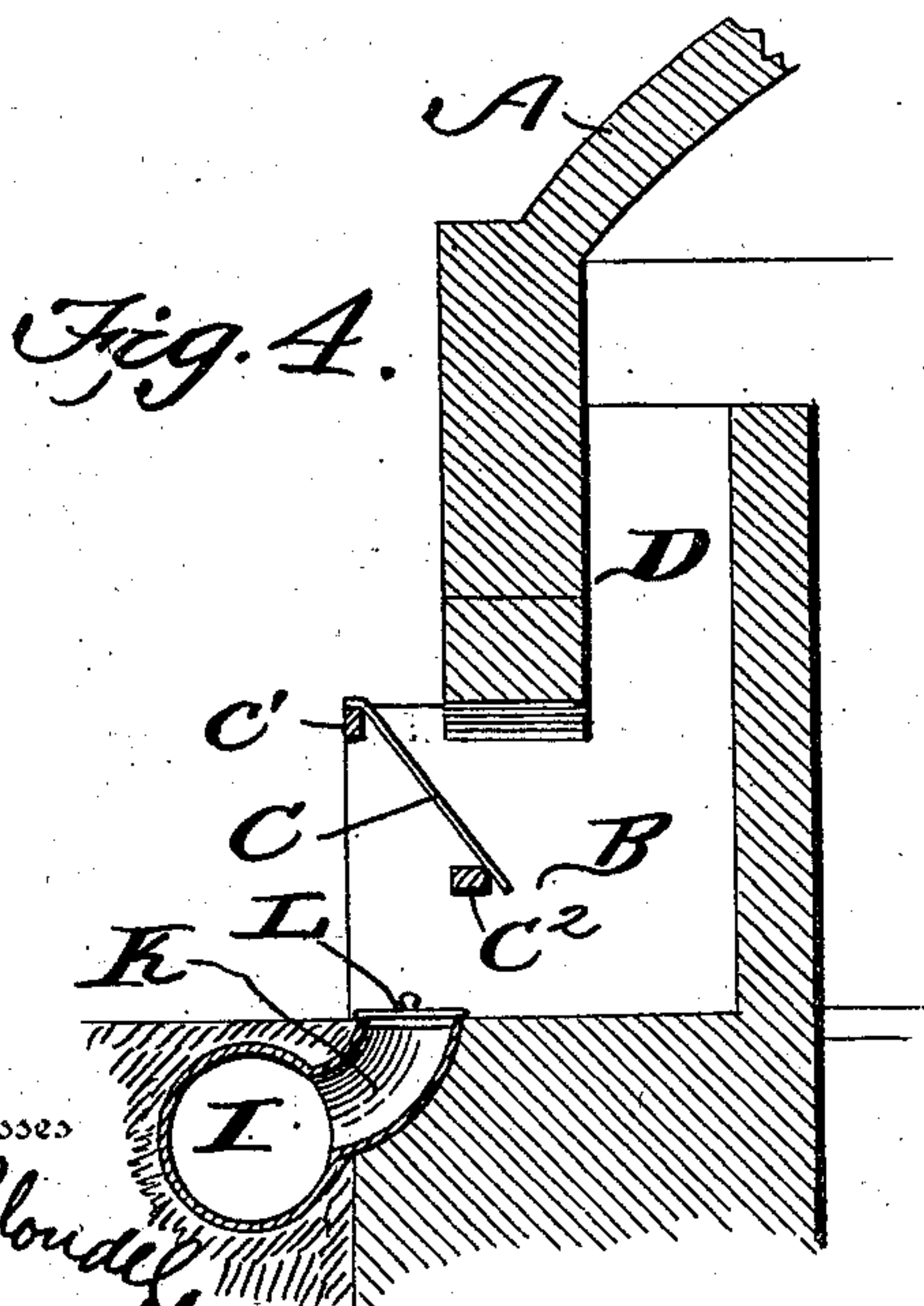
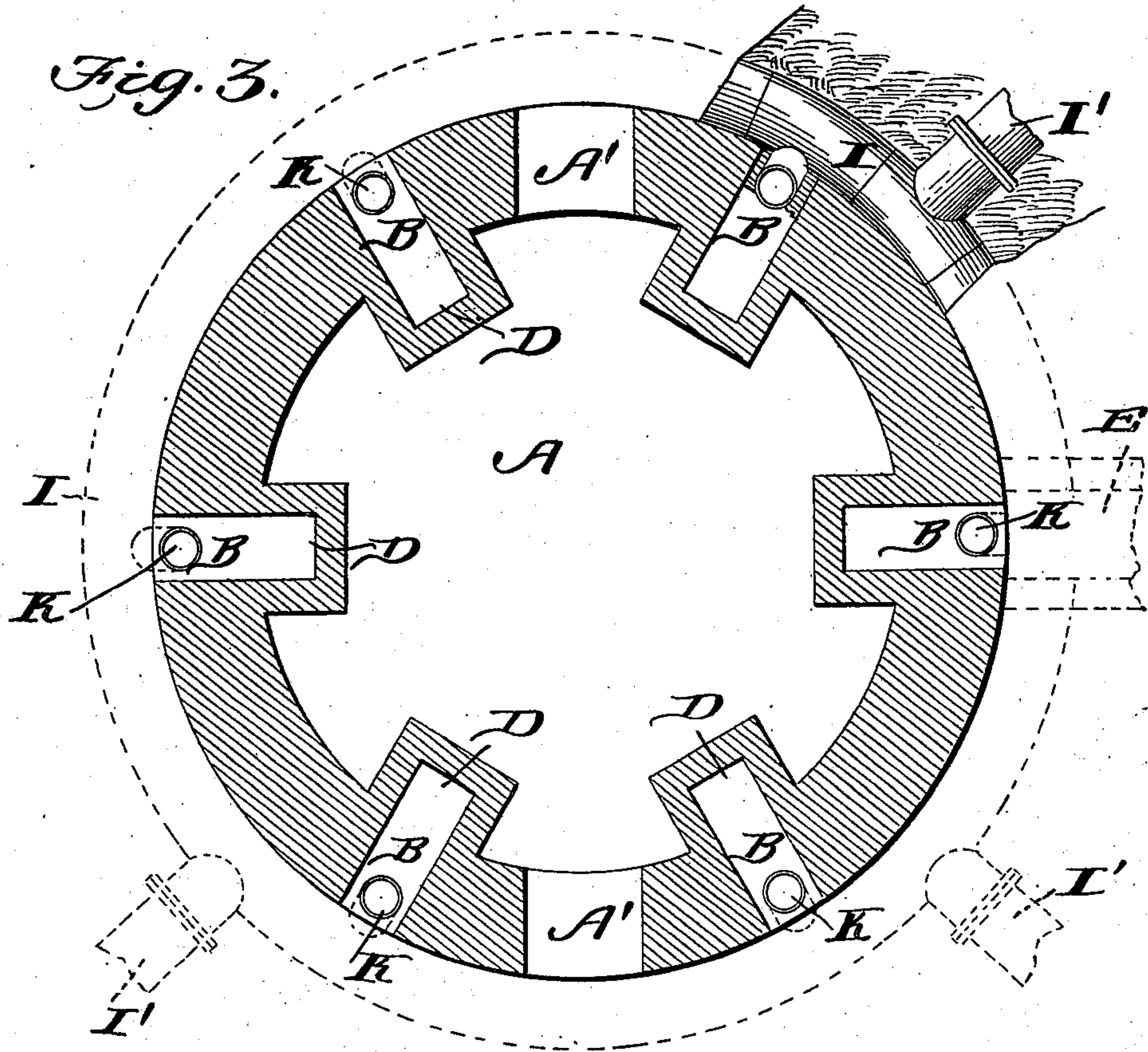
PATENTED APR. 14, 1903.

C. E. WATTS.  
KILN.

APPLICATION FILED JUNE 14, 1902.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses  
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Attorneys



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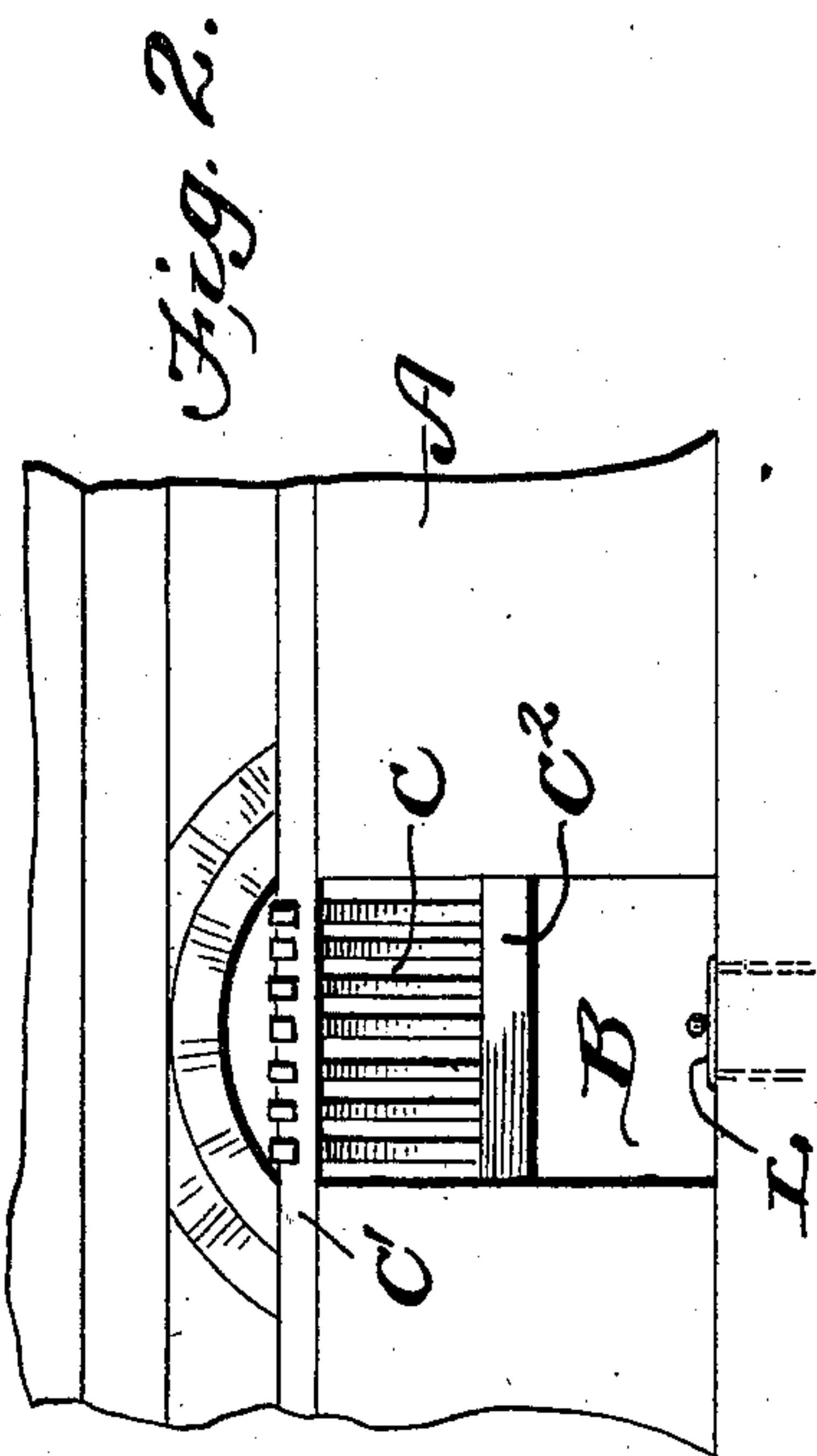
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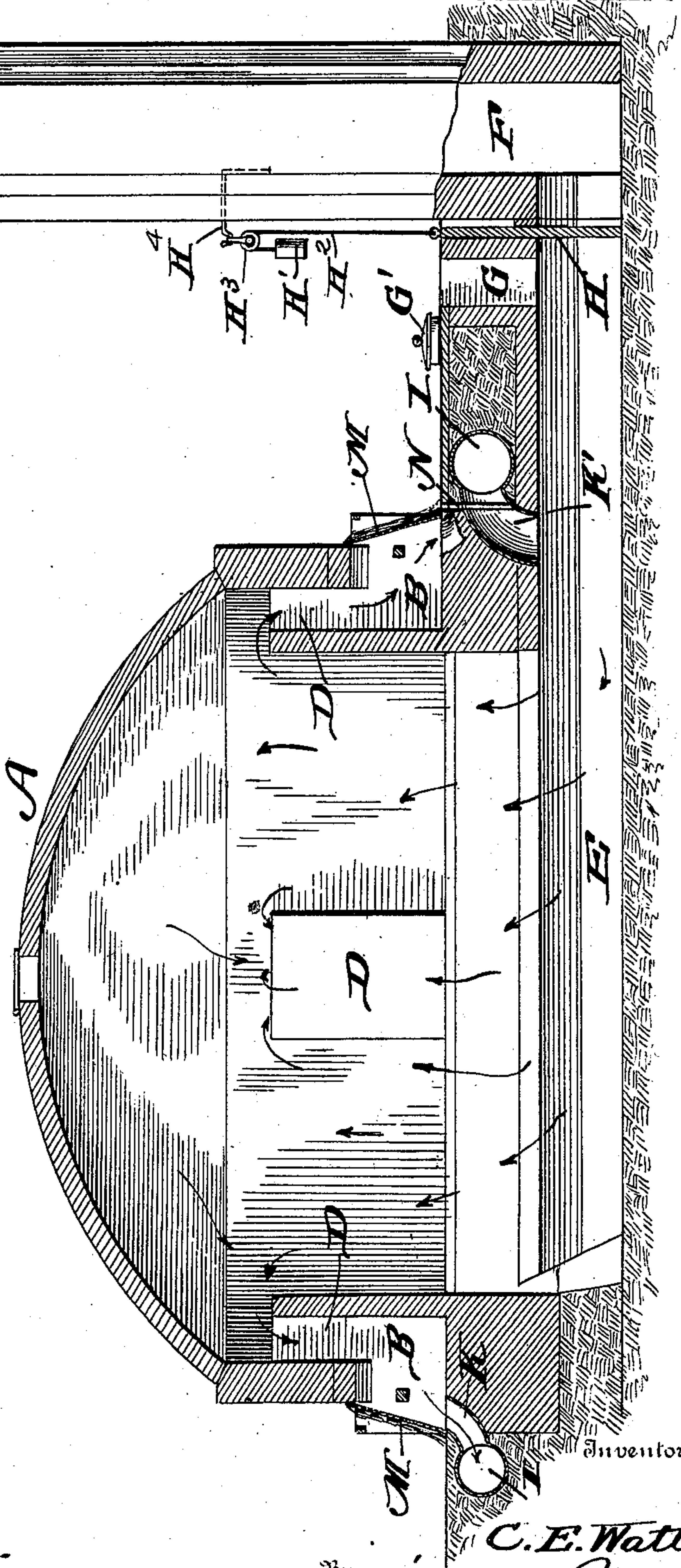
NO MODEL.

2 SHEETS—SHEET 1.



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*Fig. 1*



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# UNITED STATES PATENT OFFICE.

CHARLES E. WATTS, OF BRAZIL, INDIANA.

## KILN.

SPECIFICATION forming part of Letters Patent No. 725,519, dated April 14, 1903.

Application filed June 14, 1902. Serial No. 111,734. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. WATTS, a citizen of the United States, residing at Brazil, in the county of Clay and State of Indiana, have invented a new and useful Improvement in Kilns, of which the following is a specification.

This invention relates generally to kilns, and more particularly to kilns intended for burning pottery and similar articles.

The object of my invention is to provide a pottery-kiln with an appliance whereby heat which ordinarily escapes from the kiln after the firing operation has been completed is conducted to one or more kilns which have been filled, but which have not been fired, thereby utilizing the heat from the burned or fired kiln to effect a drying of the articles within the kiln or kilns to be fired.

With this object in view the invention consists, essentially, in surrounding a kiln with a flue, said flue having a plurality of ducts or passages leading thereto and which communicate with the fire-boxes, said flue having a series of branch pipes or flues leading therefrom and which connect with one or more kilns for the purpose of conveying heated air to the said kilns.

The invention consists also in certain details of construction and novelties of combination, all of which will be fully described hereinafter and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a central vertical section taken through a kiln provided with my improvement, the chimney being shown in elevation. Fig. 2 is a detail face view of the fire-box, showing the grate-bars arranged in place. Fig. 3 is a horizontal sectional view taken through the kiln adjacent to the bottom of the same. Fig. 4 is a vertical sectional view taken through one of the fire-boxes, the grate-bars being arranged ready to receive the fuel; and Fig. 5 is a vertical sectional view taken through the fire-box, the grate-bars being removed and the front of the fire-box walled up.

In the practical application of my invention I utilize a pottery-kiln A, which is preferably circular in shape and provided with the usual arched dome. Doors or entrances A' are arranged in the sides of the kiln at opposite points for the purpose of loading and

unloading the kiln. A series of fire-boxes B are arranged at suitable points in the side walls of the kiln, the fuel being deposited upon the grate-bars C, which are supported at their upper ends upon the cross-bar C', extending across the upper end of the fire-box, the lower end of said grate-bars resting upon a horizontal bar C<sup>2</sup>, extending transversely across the fire-box. A draft pocket or flue D is arranged upon the inner side of the kiln and communicates with the fire-box B, said pocket or flue D being open at the top, and it will of course be understood that there is a pocket or flue arranged in connection with each fire-box.

A main flue E is arranged beneath the floor of the kiln and connects with the chimney F, so that ordinarily the heat and products of combustion generated in the fire-box pass upwardly through the pockets or flues D and are then deflected downwardly over the articles to be burned and out through the flue E to the chimney. The burning operation is continued until the articles within the kiln have been sufficiently burned. The utilization of the heat remaining in the kiln after the firing operation has been completed is one of the essential points of my invention, and I propose to utilize this heat by conducting it to one or more adjacent kilns for the purpose of drying the articles contained therein, and in order to conduct the heat from the fire-kiln to the drying-kiln I employ a flue I, which is preferably built completely around the kiln below the floor-line of the fire-boxes and close thereto. Each fire-box communicates with the flue I through the medium of a duct or passage K, said duct or passage being closed at its upper end by means of a cap or cover L while the fire-box is not used, as most clearly shown in Fig. 4. After the firing operations have been completed the grate-bars C are removed and the front opening of the fire-box is closed by means of a plate M, which is thoroughly cemented around the edges to prevent the escape of heat. The cap or cover L is removed from the duct or passage K just prior to closing the front entrance of the fire-box. A damper H is arranged in the main flue E, adjacent to the chimney F, and by lowering the said damper the escape of heat through the chimney is cut



off, and cap plates or covers L being removed it is obvious that the heat must pass from the kiln A down through the pockets or flues D and into the flue or pipe I through the ducts or passages K, and from the flue or pipe I the heat passes through the branch pipes I' to one or more kilns and is utilized for drying the articles contained therein. A manhole G is arranged in the flue E, also adjacent to the chimney, and is provided with a cap or cover G', which is raised when the damper H is closed.

N indicates a damper which is adapted to close the duct or passage K', leading from the flue E into the flue I, it being obvious that such damper is needed when the flue E is employed for conducting the products of combustion to the chimney F. The advantage of the duct or passage K' will also be apparent to every one, as it is obvious that a considerable portion of the heat would be within the flue E after the firing operation had been completed, and the greater portion of this heat is therefore immediately conducted into the flue I, while that portion of the heat within the kiln proper is conducted to the flue through the pockets D, fire-boxes, and ducts or passages K.

It will thus be seen that I provide a very simple appliance or apparatus which can be used in connection with most of the pottery-kilns now in use and by means of which all of the heat contained within the kiln after the firing operation has been completed can be utilized in one or more adjacent kilns for the purpose of drying the articles contained therein.

In practice I propose to provide the damper H with a counterbalance-weight H', which is connected to a rope or chain H<sup>2</sup>, that runs up over a pulley H<sup>3</sup>, carried by a bracket H<sup>4</sup>, secured to the chimney F, then down, and is connected to a damper by means of a staple.

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

1. The combination with a kiln having a main flue and a damper arranged therein, a

flue surrounding the said kiln, a plurality of fire-boxes, a series of ducts or passages connecting the fire-boxes of the kiln with the flue surrounding the said kiln, the plates for closing the front sides of the fire-boxes, a duct connecting the two flues, a damper arranged therein, a manhole leading to the main flue, and a cap adapted to close the manhole, substantially as specified.

2. The combination with a kiln, of a pipe surrounding the lower portion of the kiln, fire-boxes arranged around the kiln, a duct or passage connecting each fire-box of the kiln with the said pipe, a cover for closing the upper end of said duct or passage, and means for closing the front side of the fire-box, substantially as specified.

3. The combination with a kiln having a main flue arranged beneath the same, said flue being provided with a damper, a pipe surrounding the kiln and provided with a series of ducts connecting the said flue with the fire-boxes of the kiln, a passage connecting the main flue with the pipe surrounding the kiln, and a damper adapted to close the said passage, a manhole communicating with the flue and opening outside of the kiln, and means for closing said manhole, substantially as specified.

4. The combination with a kiln having a series of fire-boxes, each fire-box having a pocket or flue connected therewith, of the detachable grate-bars, the plates for closing the fronts of the fire-box, the main flue leading to the chimney and provided with a damper, a flue surrounding the kiln and provided with a series of ducts or passages communicating with the bottom of the fire-box, the cap-plates or covers for closing the said ducts or passages when not in use, a duct or passage connecting the main flue with the flue surrounding the kiln, and the damper adapted to close the said flue, substantially as specified.

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