

No. 768,287.

PATENTED AUG. 23, 1904.

C. F. KAUL.
BRICK KILN.

APPLICATION FILED JAN. 28, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

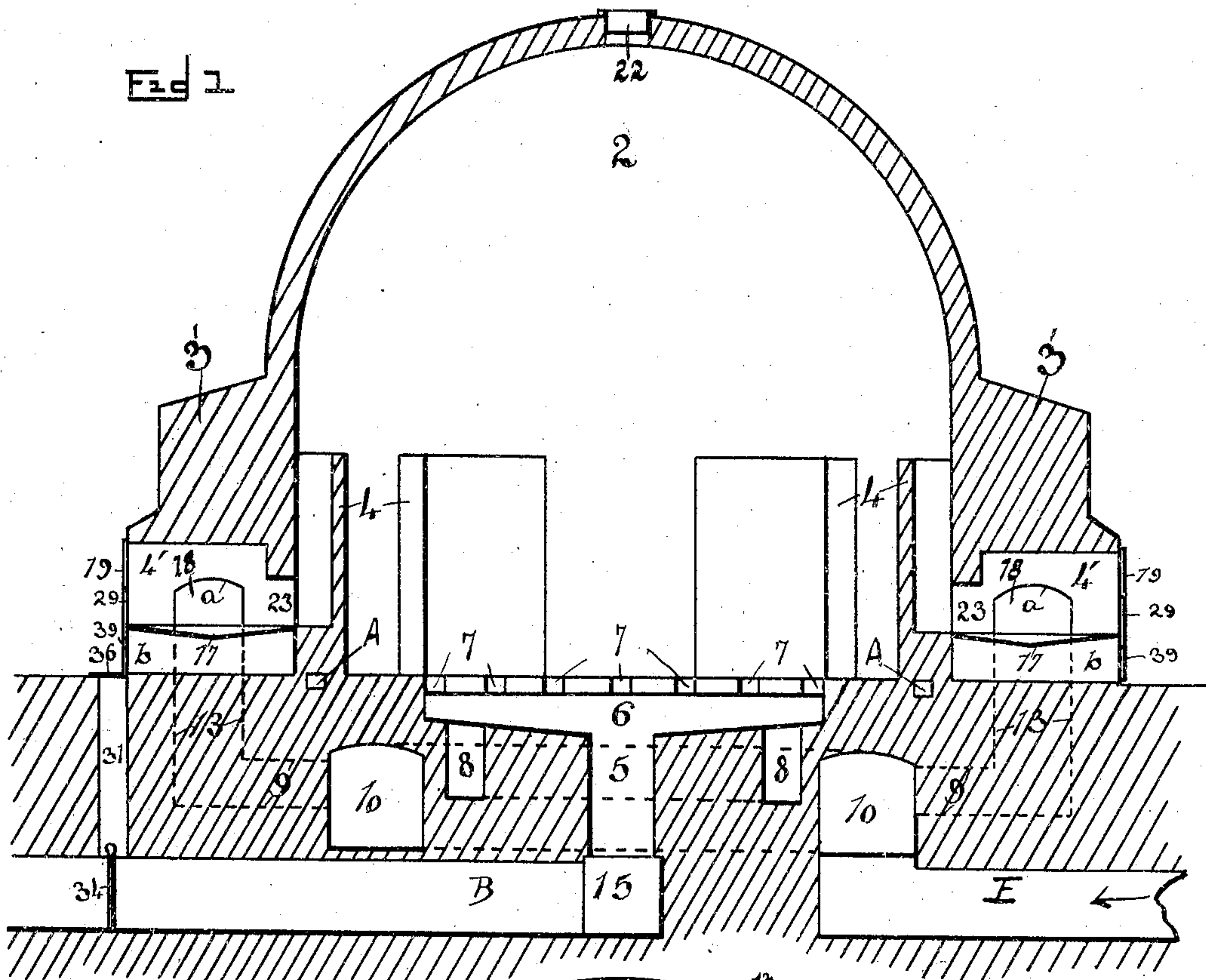
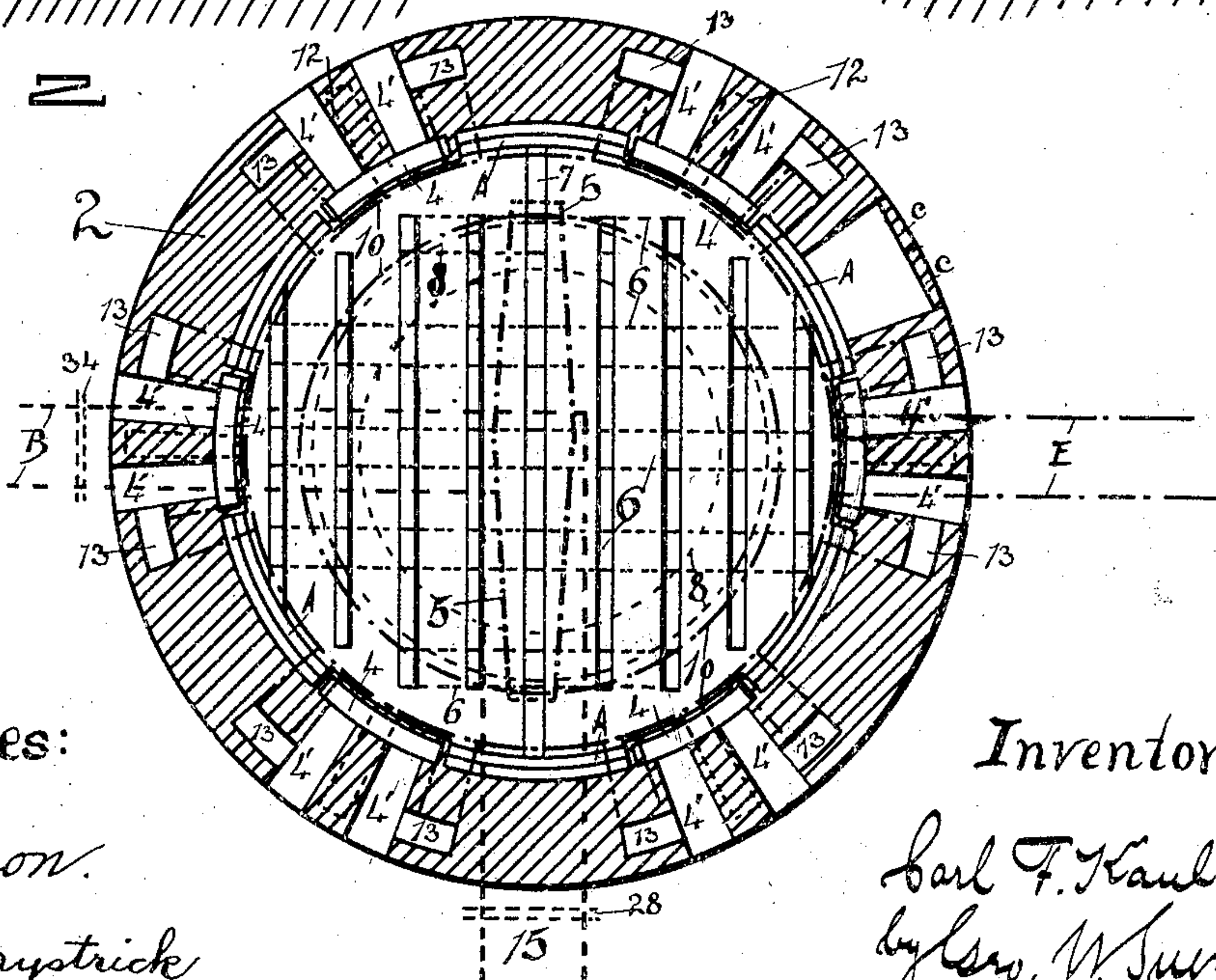


Fig 2



Witnesses:

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Inventor:

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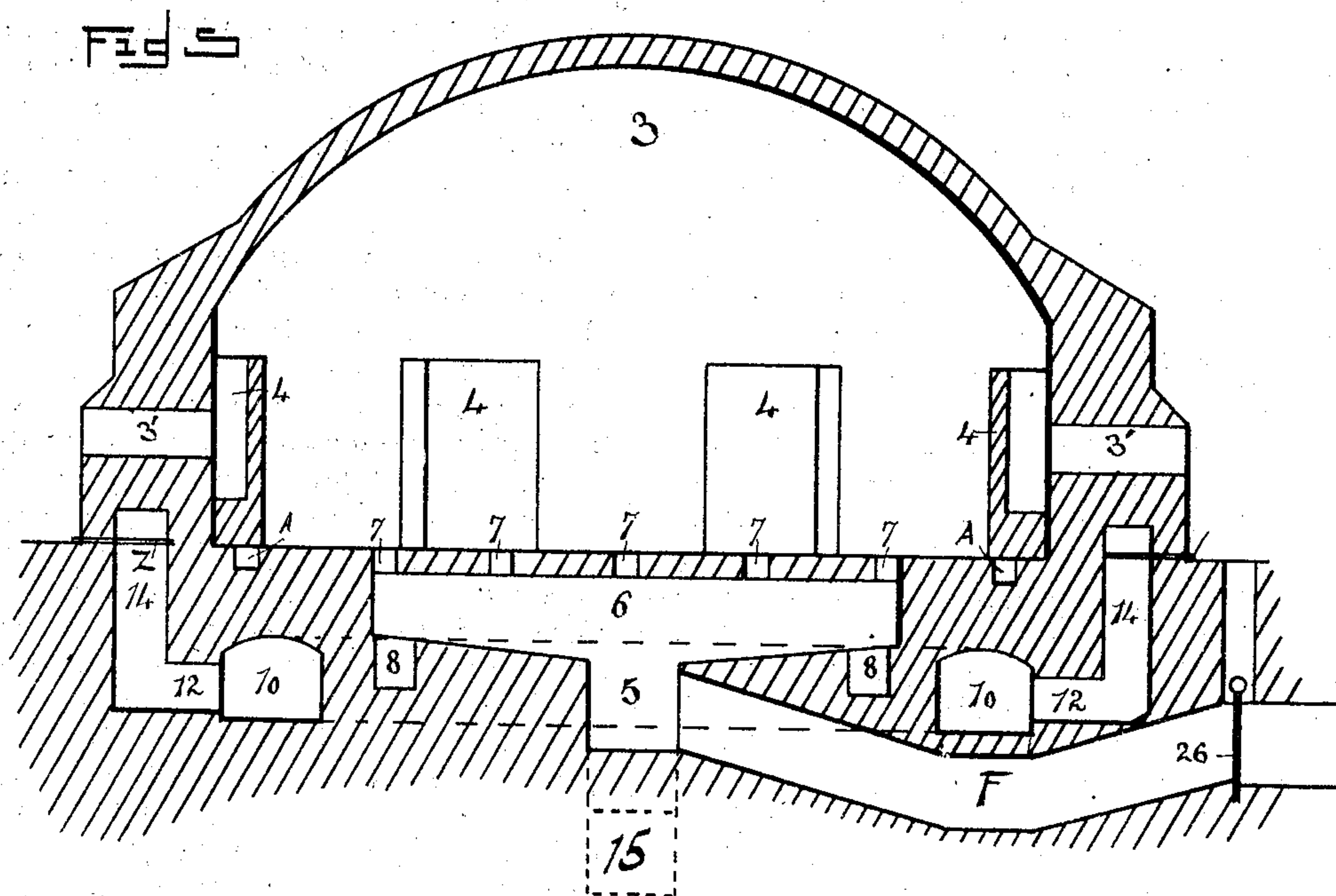
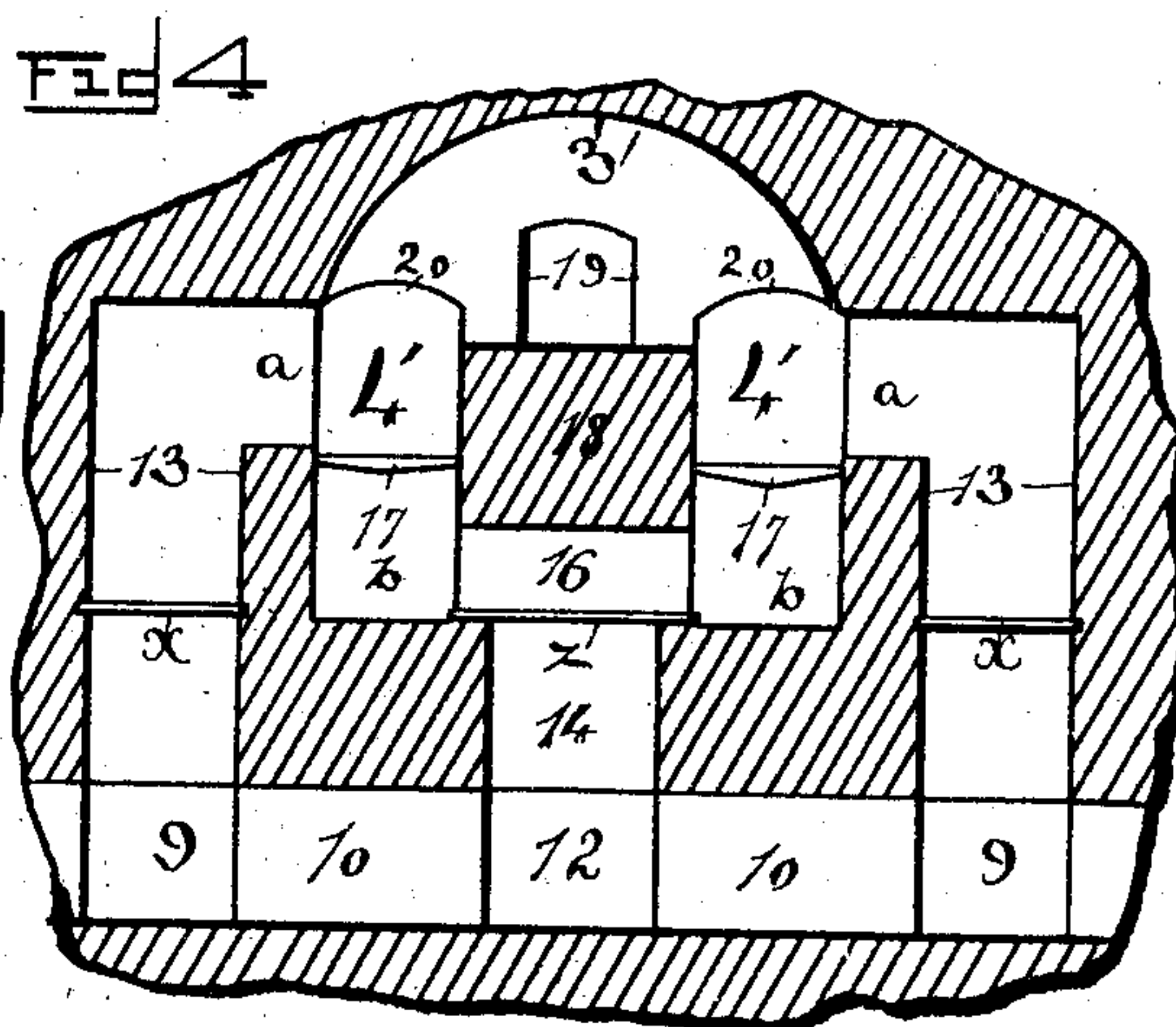
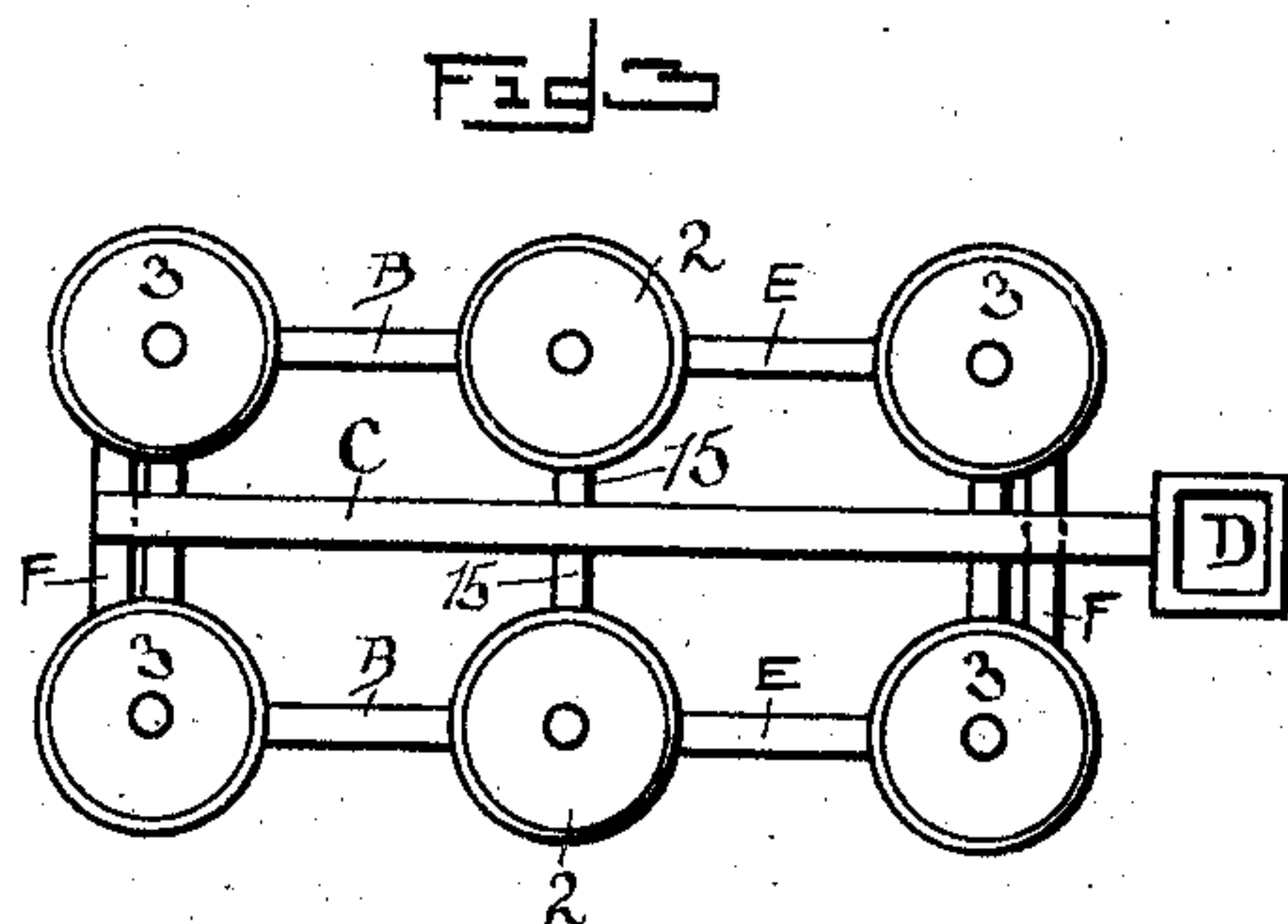
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

CARL F. KAUL, OF MADISON, NEBRASKA.

BRICK-KILN.

SPECIFICATION forming part of Letters Patent No. 768,287, dated August 23, 1904.

Application filed January 28, 1902. Serial No. 91,649. (No model.)

To all whom it may concern:

Be it known that I, CARL F. KAUL, residing at Madison, in the county of Madison and State of Nebraska, have invented certain useful Improvements in Brick-Kilns; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to an improvement in brick-kilns.

The object of my invention is to provide a brick-kiln provided with a plurality of furnaces and so constructed as to develop the greatest amount of heat from a given quantity of fuel; and my invention embodies certain other instrumentalities, as will be described more fully hereinafter, and finally pointed out in the claim.

In the accompanying drawings I have shown in Figure 1 a central sectional view of a kiln embodying my invention. Fig. 2 shows a flue plan of one of my kilns. Fig. 3 shows a top view, disclosing the arrangement of six connected kilns. Fig. 4 shows a sectional elevation, disclosing the arrangement of one of the furnaces, while Fig. 5 shows a sectional view, disclosing the arrangement of the flues connected with the chimney.

My invention comprises a preferably circular kiln, used in sets disposed in series multiple. Within each kiln is a set of combustion-chambers each provided with two furnaces 4', as disclosed in Fig. 4, between which is positioned a coking-pier 18. Within each furnace 4' is disposed a grate 17, so as to provide the lower ash-pit *b*. The furnaces are provided with suitable furnace-doors 29, (shown in Fig. 1,) the ash-pit having the doors 39, while the combustion or coking chamber is provided with the door 19. It will be noticed that the furnaces 4' and the combustion-chamber are practically one compartment, into which extends the pier 18.

In Fig. 3 it will be noticed that the end kilns are marked 3 3 and the intermediate kilns 2 2. Each kiln is provided with a plurality of duplex furnaces, as described. In

Fig. 2 is shown a top view of one of the intermediate kilns 2, while one of the terminal kilns is shown in Fig. 3. The floors of all these kilns are provided with a plurality of transverse floor-flues 7 7, as is shown in Figs. 1 and 2, and a circular flue A. These floor-flues 7 in turn communicate with a plurality of transverse subflues 6, and these subflues 6 in turn communicate with an inner circular flue 8, as shown. The subflues 6 further communicate with a central flue 5, and this central flue 5 communicates with a chimney-flue 15 and an exit-flue B, as is indicated in Fig. 1.

Disposed within the bottom of the furnaces is a main circular furnace-flue 10, disposed within the bottom of the kiln, as indicated in dotted lines in Fig. 2. Entering the flue 10 of the intermediate kilns 2 2 at one point is the intake-flue E, which flue E forms an exit-flue of the kilns 3 3 upon one side, as shown in Fig. 3. Extending from the circular flue 10 are a plurality of lateral flues 9 9 and 12, these flues being disposed in sets of threes, there being two such flues 9 and one flue 12 in each set, as is indicated in Fig. 4. Extending upward from each flue 9 is a vertical flue 13, which is provided at a suitable point with a valve *x*, as is shown in Fig. 4, and these flues 13 branch off at right angles by means of a stub-flue *a* into the furnaces 4', there being one such stub-flue *a* for each furnace, these stub-flues entering the furnaces above the grates 17, as shown. Extending upward from the horizontal flue 12 is the vertical flue 14, which above communicates with a transverse flue 16 within the coking-pier 18, emptying into each ash-pit *b* below the grates 17 of the furnaces 4', this vertical flue 14 being provided with a valve *z*.

Disposed within each kiln are a plurality of fire-bags 4, there being one fire-bag for each set of furnaces, and each furnace 4', referring now to Fig. 1, empties by means of a stub-flue 23 into a fire-bag 4, from which the heat is directed upward into the kiln. Each kiln at a suitable point, as shown in Fig. 2, is provided with suitable doors *c*, so that the products to be burned may be readily conveyed into the kiln.

In the use of my kiln the operation is as

follows: We will assume one of the end kilns 3, as well as one of the intermediate kilns 2, are filled with suitable clayware or pottery to be burned. Fire will then be started in the furnaces 4' of the kiln 2, and from these furnaces the products of combustion will escape through the stub-flues 23 into the fire-bags 4 and thence into the kiln 2. Referring to Fig. 1, the intermediate kiln 2 will be filled with the heat and products of combustion to interiorly fill this kiln, and the products will finally find an escape through the floor-flues 7 into the subflues 6 and thence by means of the flue 5 into the chimney-flue 15. As soon as the steam has escaped from the ware the escape of the heat products to the chimney are cut off by means of the damper 28, (shown in Fig. 2,) so that the heat is directed through the flue B into the kiln 3 adjoining. The products escaping into the circular flue A will escape through the flues 7, one or more of these floor-flues 7 being in communication with the circular flue A, as is shown in Fig. 2. Now if the flue 15, which, referring now to Fig. 3, empties into the chimney-flue C is open, the products will escape to the smoke-stack D. Referring to Fig. 2, however, should the valve 28 be closed, the products of combustion escaping from the intermediate kilns 2 will find an escape through the exit-flue B and empty into the end adjacent kiln 3 upon the emptying side. These exit-flues B are provided with suitable valves 34, which are operated through pockets 31, closed by the plates 36, as is disclosed in Fig. 1.

The operation will be exactly the same for the end kilns 3, and the products of combustion in escaping through the end kiln will find an exit through their exit-flues F into the adjacent kiln. From each circular furnace-flue 10 the heat finds escape through the horizontal lateral flues 9 9 and 13 and through the vertical flues 13 13 and 14 and empty into and mingle with the fire within each furnace, a part of the products of combustion entering the furnaces 4 above the grates of the kiln upon one side, as set forth, and a part below the grate, as will be understood in referring to Fig. 4.

The coking-chambers are filled with coal to cover the pier 18, and from this pier from time time the coke fuel is thrown sidewise upon the grates 17, so that the products of combustion

from one kiln are fed into the adjacent kiln-furnaces above and below the grates, so that the products are made to circulate through the system of furnace-kilns time and again to insure a high degree of combustion, and the terminal kiln or any intermediate kiln in order to facilitate the draft may be placed in communication with the smoke-flue C at any time to insure proper circulation of the products of combustion.

The end kilns are provided with communicating flues F, having a valve 26, as is shown in Fig. 5. The flues here shown are round, and the furnaces are all accessible from without, as has been set forth.

While I have described my furnaces as being provided with the grate-bars 17, I do not wish to confine myself exclusively to the use of grate-bars. I further do not wish to confine myself to a furnace comprising two sets of fire chambers or grates, as these furnaces can be constructed singly with good results for certain fuels.

If desired, each kiln may be provided with a top 2 2, as is disclosed in Fig. 1.

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

In a kiln the combination with a main flue, of a plurality of combustion-chambers deposited within said kiln, a coking-pier within each combustion-chamber, a furnace upon opposite sides of each coking-pier, each of said combustion-chambers communicating with its connected kiln, a flue extending from said main flue into each furnace above each grate, a flue within each coking-chamber emptying below the grate of each furnace, said coking-pier flue also communicating with said main flue, a plurality of floor-flues within each kiln, an exit-flue extending from each kiln and entering a main chimney-flue, a valve within said exit-flue communicating with the interior of said kiln, an intake-flue extending from an adjacent kiln entering said main flue, and a valve-controlled exit-flue communicating with the floor-flues of each kiln and entering an adjacent flue, all arranged as set forth.

CARL F. KAUL.

In presence of—

GEORGE W. SUES,
FRED J. LARSON.