

(No Model.)

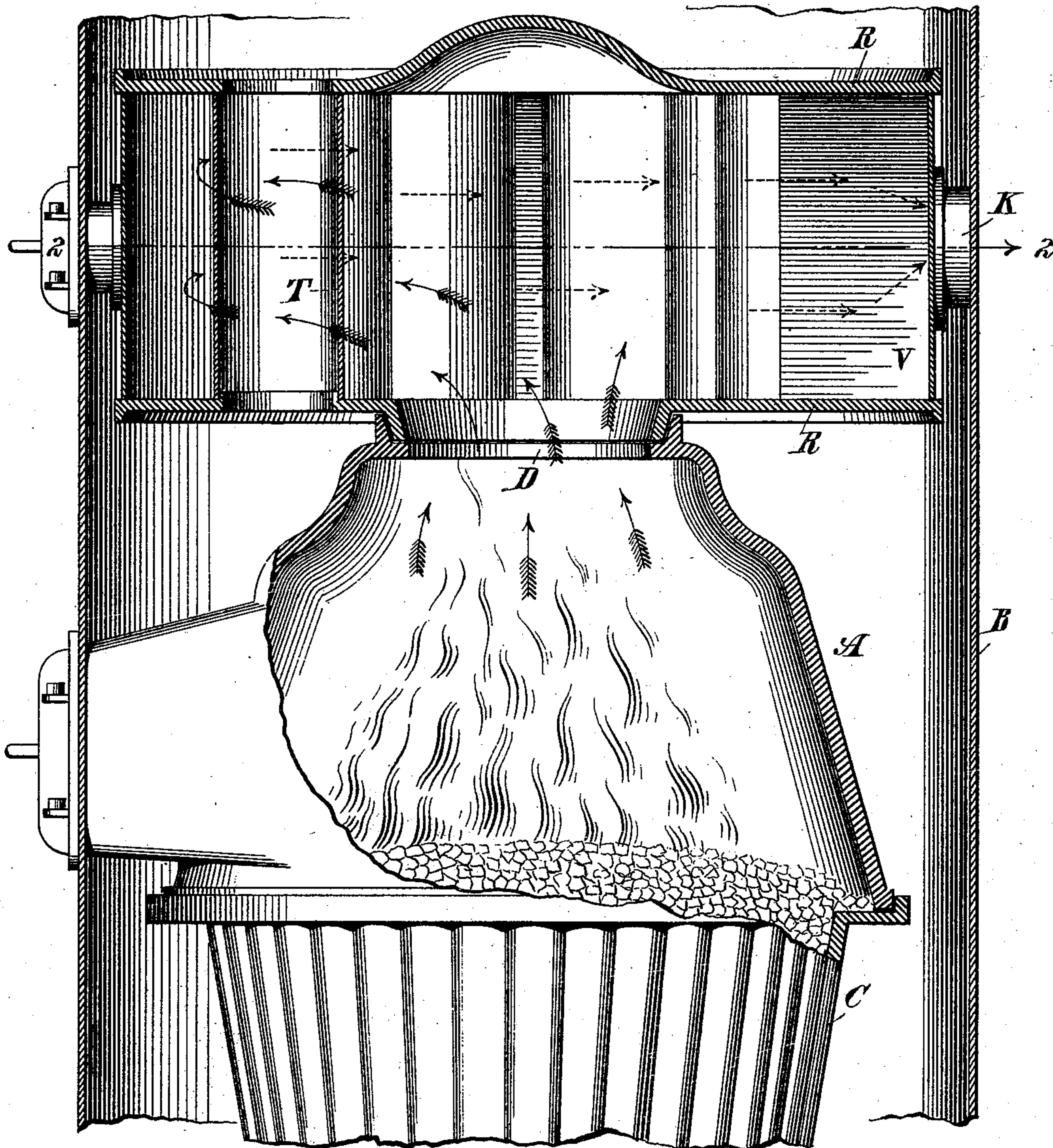
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J. J. RICHARDSON.  
FURNACE.

No. 501,695.

Patented July 18, 1893.

Fig. 1.



WITNESSES:

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M. V. Bidgood

INVENTOR

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(No Model.)

2 Sheets—Sheet 2.

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FURNACE.

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Fig. II.

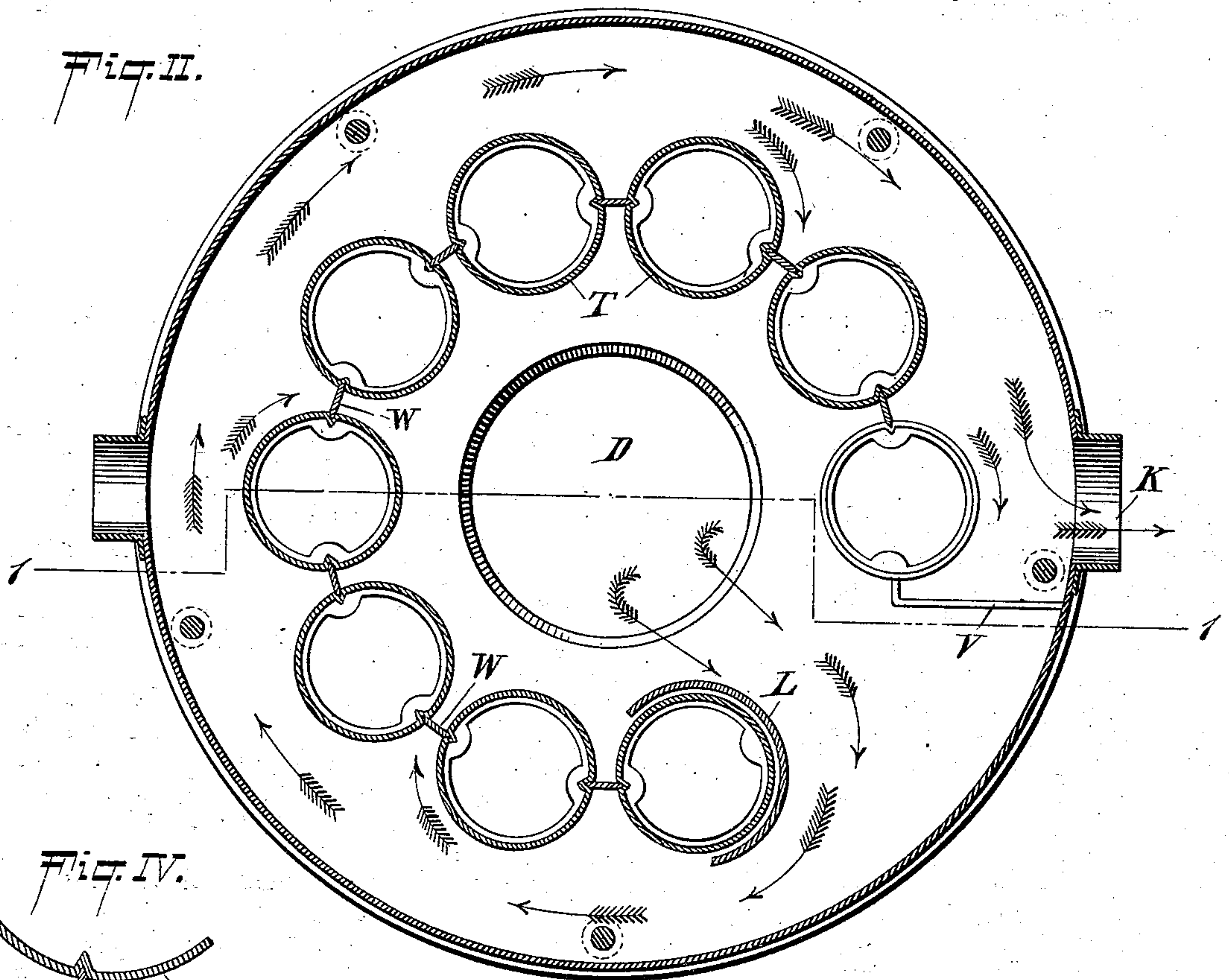


Fig. IV.

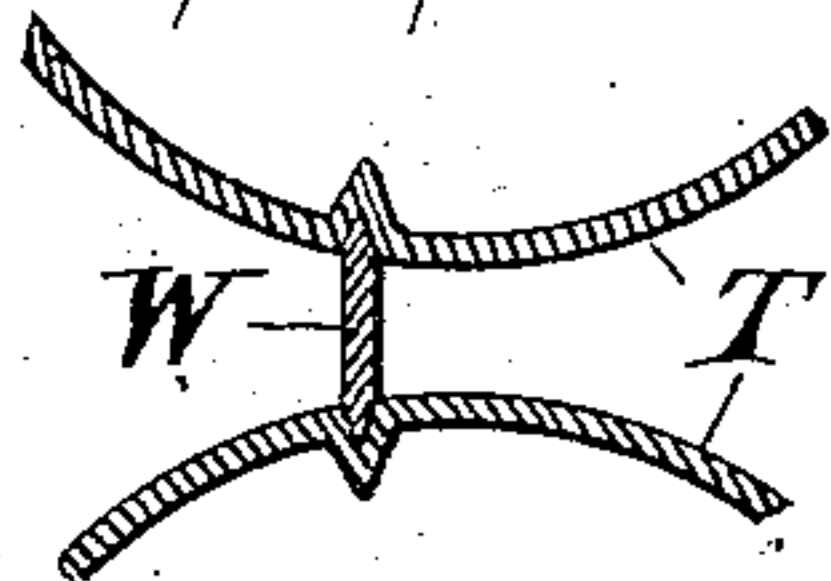
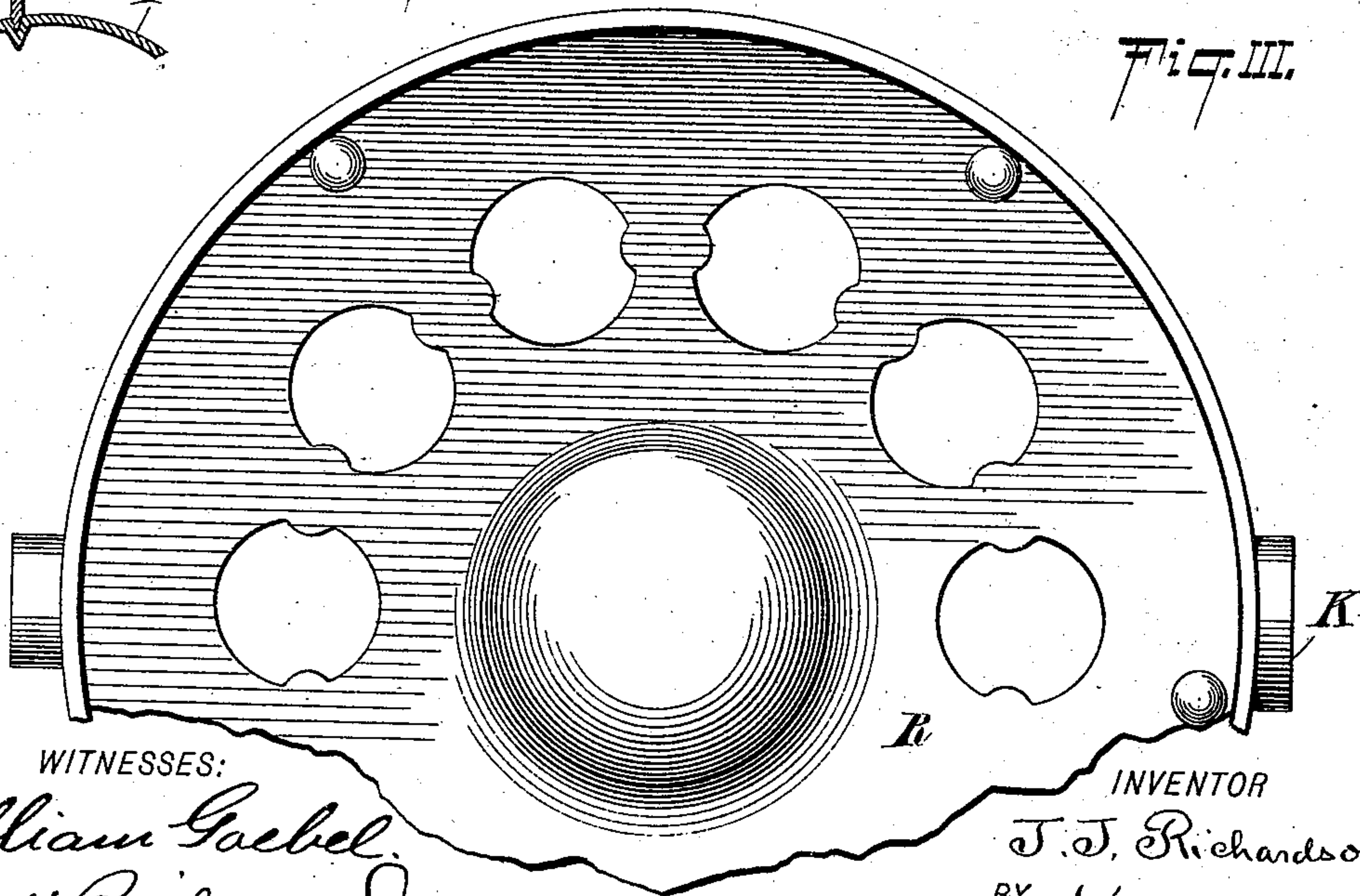


Fig. III.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JEREMIAH J. RICHARDSON, OF BROOKLYN, NEW YORK.

## FURNACE.

SPECIFICATION forming part of Letters Patent No. 501,695, dated July 18, 1893.

Application filed December 19, 1892. Serial No. 455,684. (No model.)

*To all whom it may concern:*

Be it known that I, JEREMIAH J. RICHARDSON, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

My invention relates to a novel construction and arrangement of air heating pipes in furnaces, the object being to distribute the products from the combustion chamber evenly over the entire surface of the air heating pipes whereby the heat may be utilized to the greatest possible extent.

Referring to the accompanying drawings which form a part of this specification:—Figure I is a vertical section of one of my improved furnaces drawn on the line I—I, Fig. II. Fig. II is a cross section on the line II—II, Fig. I. Fig. III is a top view the outside casing being removed. Fig. IV is a detail view.

In the drawings A represents a dome seating upon the fire box C as shown in Fig. I. The dome A terminates at its upper end in a single discharge orifice D. Upon this rests the radiator R consisting of top and bottom plates and side wall. The plates are perforated as shown, such perforations being located opposite to each other in both plates and being connected by inclosing walls T which form tubes or conduits for the heated air passing upwardly through the chamber B. The tubes are shown in cross section in Fig. II and they are connected to each other by walls W. The products of combustion as they enter the radiator through the orifice D will be directed as indicated by the arrows shown in Fig. II. After making a complete circuit exteriorly of the tubes T, the products of combustion

will reach the terminal wall V and be directed into the discharge flue K. The intermediate walls W prevent the products of combustion escaping between the tubes T and will compel them to travel around the entire circuit.

At L I show a reinforce wall to prevent the products of combustion from overheating the initial tube T.

It will be seen from the above that I am enabled to utilize to the greatest possible extent the fuel employed and have secured means for evenly heating the entire series of surfaces of the air-warming tubes.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a furnace, a radiator R with perforated top and bottom plates and a series of perpendicular air heating flues connected centrally with each other by cut off walls, all arranged substantially as set forth and in such a manner that the products of combustion after being utilized upon one side of the concentric series of flues are drawn over the other side of the same flues, as set forth.

2. In a furnace, a radiator provided with a centrally located orifice for introducing the products of combustion, a series of perpendicular hot air pipes arranged in a circle around said orifice, in combination with the dividing partitions or plates between the perpendicular hot air pipes in connection with the end division perpendicular plate V arranged just beyond the exit flues, as and for the purpose set forth.

JEREMIAH J. RICHARDSON.

Witnesses:

THOMAS C. BODIM,  
FREDERICK KOCH.