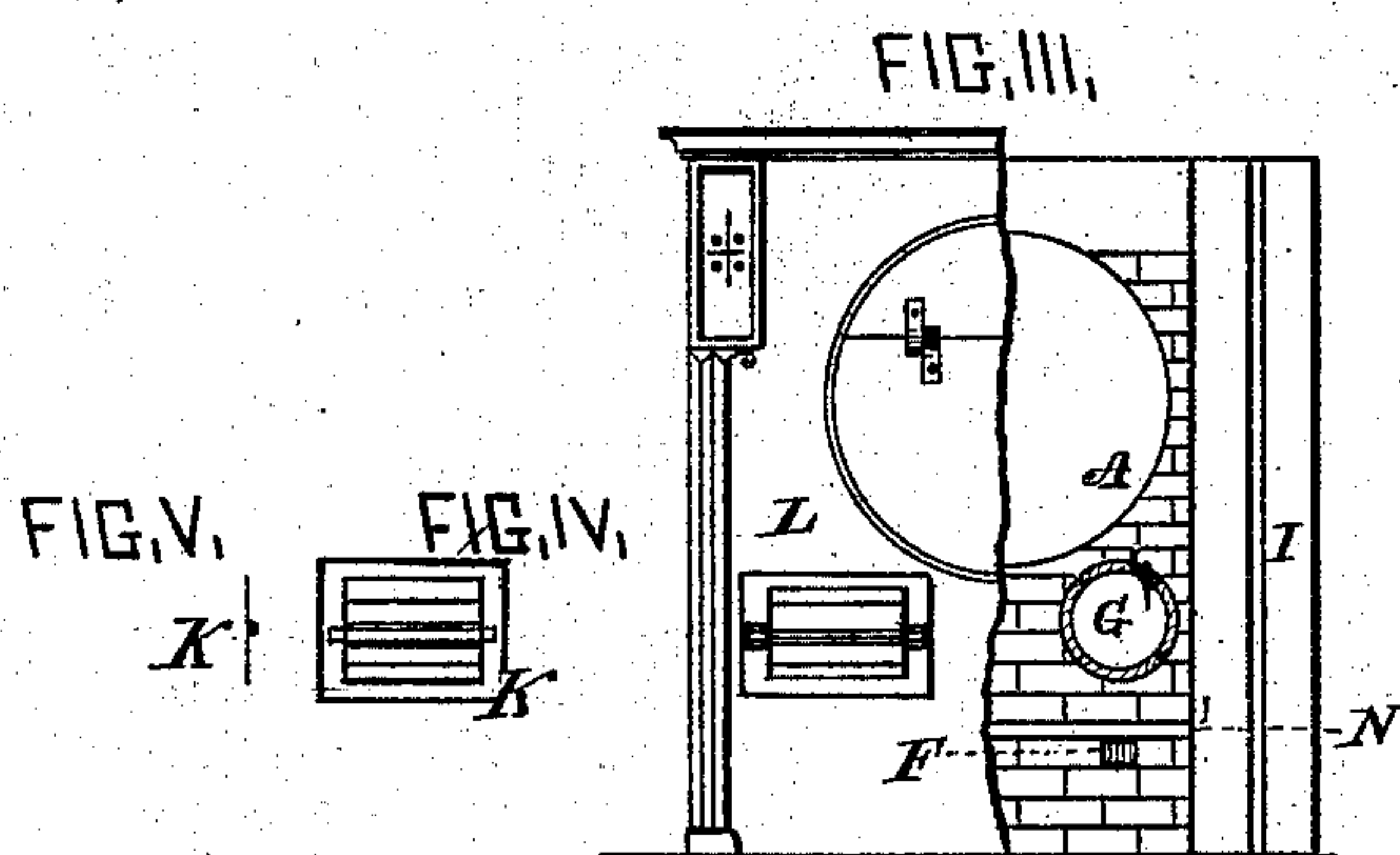
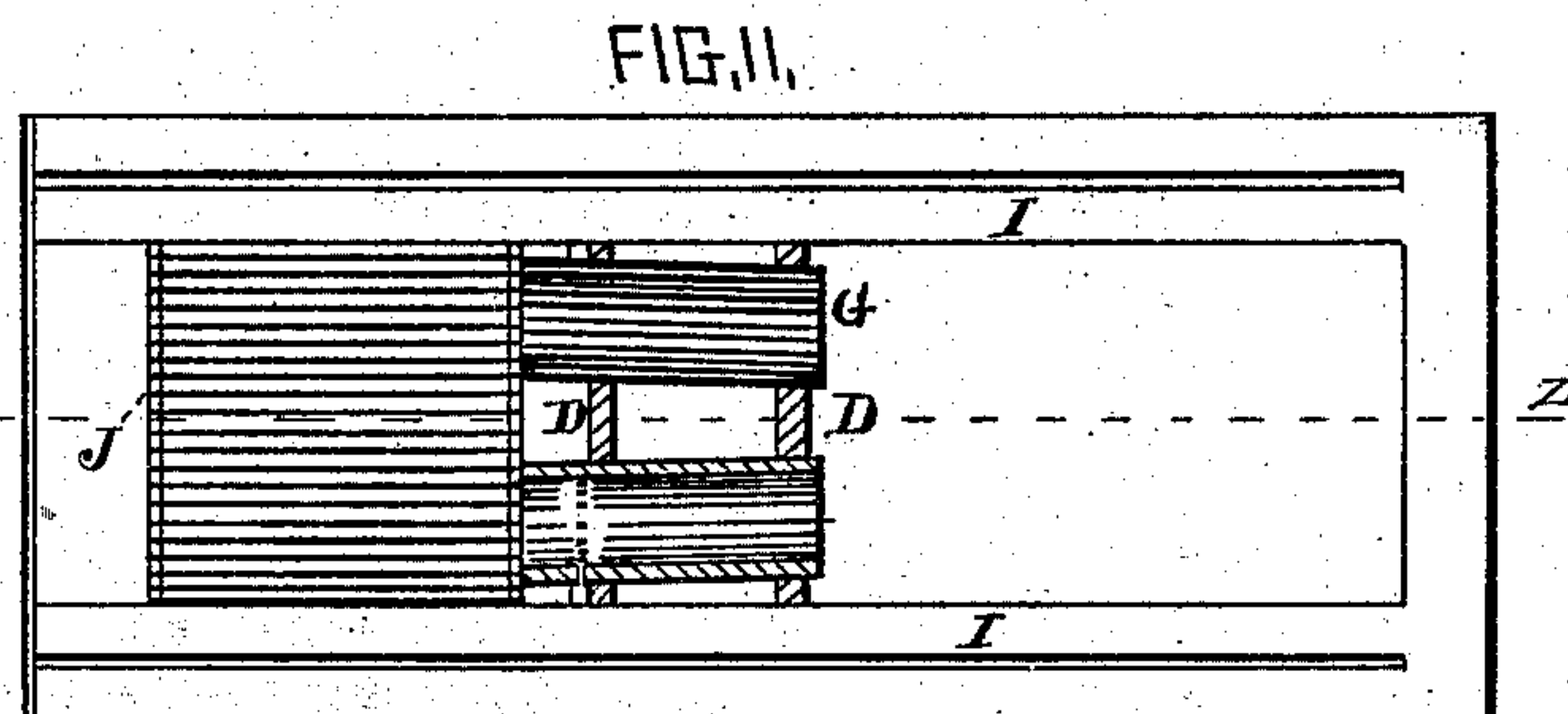
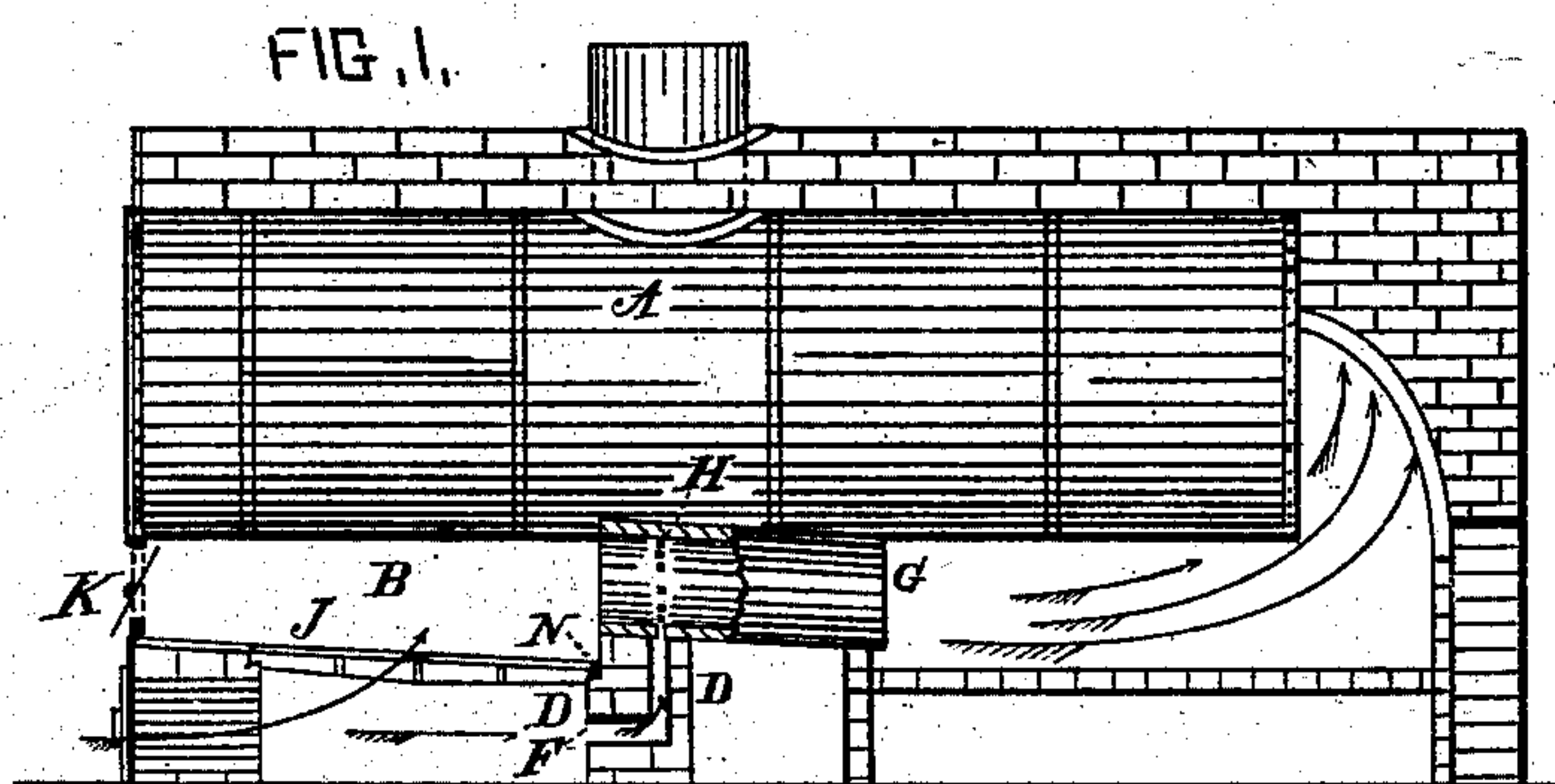


(No Model.)

J. RITCHIE.
SMOKE BURNING FURNACE.

No. 271,989.

Patented Feb. 6, 1883.



WITNESSES,
Mr. M. Mary.
Jm Clancy-

INVENTOR,
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By G. L. Chapin
ATTY.

UNITED STATES PATENT OFFICE.

JOHN RITCHIE, OF CHICAGO, ILLINOIS, ASSIGNOR TO JOHN N. MANNING
AND GEORGE MEHRING, OF SAME PLACE.

SMOKE-BURNING FURNACE.

SPECIFICATION forming part of Letters Patent No. 271,989, dated February 6, 1883.

Application filed July 22, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN RITCHIE, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Steam-Boiler Furnaces, of which the following is a specification, reference being had to the accompanying drawings, illustrating the invention, in which—

Figure 1 is a longitudinal central sectional elevation of a furnace and elevation of a boiler embodying my improvement and invention; Fig. 2, a horizontal section of the furnace, taken beneath the boiler and above the combustion-pipes; Fig. 3, a front elevation of the furnace, with a portion thereof broken away to show the combustion-pipes. Fig. 4 is an end view of the pivoted door K. Fig. 5 is a side view of same and the frame.

The object of the present invention is so to improve the ordinary steam-boiler furnace as to attain a better combustion in and back of the bridge-wall, whereby the heat is more uniformly diffused and a uniform temperature attained in the front and rear of the bridge-wall.

The nature of the invention consists in tapering flues placed through a solid bridge-wall. The rear or back ends of the flues are the smaller, and converge, so as to concentrate the flames of the two flues in one flame at such a distance back of the bridge-wall as to produce an intense heat to keep up the temperature back of the bridge-wall. The object of the taper of the flues is to provide a greater combustion area at the front of the bridge-wall, where there is the greater amount of solid materials to be burned, and not to allow the said materials to fully escape from the action of the concentrated heat till that substance known as "smoke" is reduced before escaping up the chimney.

A represents a steam-boiler.

D is the solid bridge-wall.

G G represent two flues or combustion-pipes, which are made of fire-clay or similar material, with their rear or back ends smaller than their

induction ends at the front of the bridge-wall, and the narrower ends are inclined toward each other, so as to direct the two flames coming from them into one flame to concentrate an intense heat for the purpose stated. The degree of taper given to the flues must depend somewhat on the force of the draft; the greater the draft the greater the taper should be and the closer the smaller ends of the flues should be set to each other. The cold air is brought to the flues by means of ports F and a series of perforations extending round the under portion of the flues.

B is the fire-box, and K the damper in the door.

I am aware that a single flue of equal area at the front and back end has been placed in a bridge-wall, and that a series of such flues have been employed in the same place. I therefore confine and limit my invention to the tapered flues and to their rear converging position.

I am aware that tapered flues without air-ports in them have been used, and that flues have been made to converge at their rear ends. I therefore confine myself to the combination and construction specifically set out in the claim.

I claim as my invention—

In steam-boiler furnaces in which the bridge-wall incloses the space below the boiler, the two flues G G, formed of truncated cones, with their smaller ends converged and projected to the back of the bridge-wall, the said flues provided each with a series of air-ports extending for more than half round their under sides, to concentrate the flames therein centrally toward the upper portions of the flues, and tapered to bring together said concentrated flames at the rear of the bridge-wall, as specified.

JOHN RITCHIE.

Witnesses:

G. L. CHAPIN,
GEORGE MEHRING.