

U. B. STRIBLING.
Furnaces.

No. 154,570.

Patented Sept. 1, 1874.

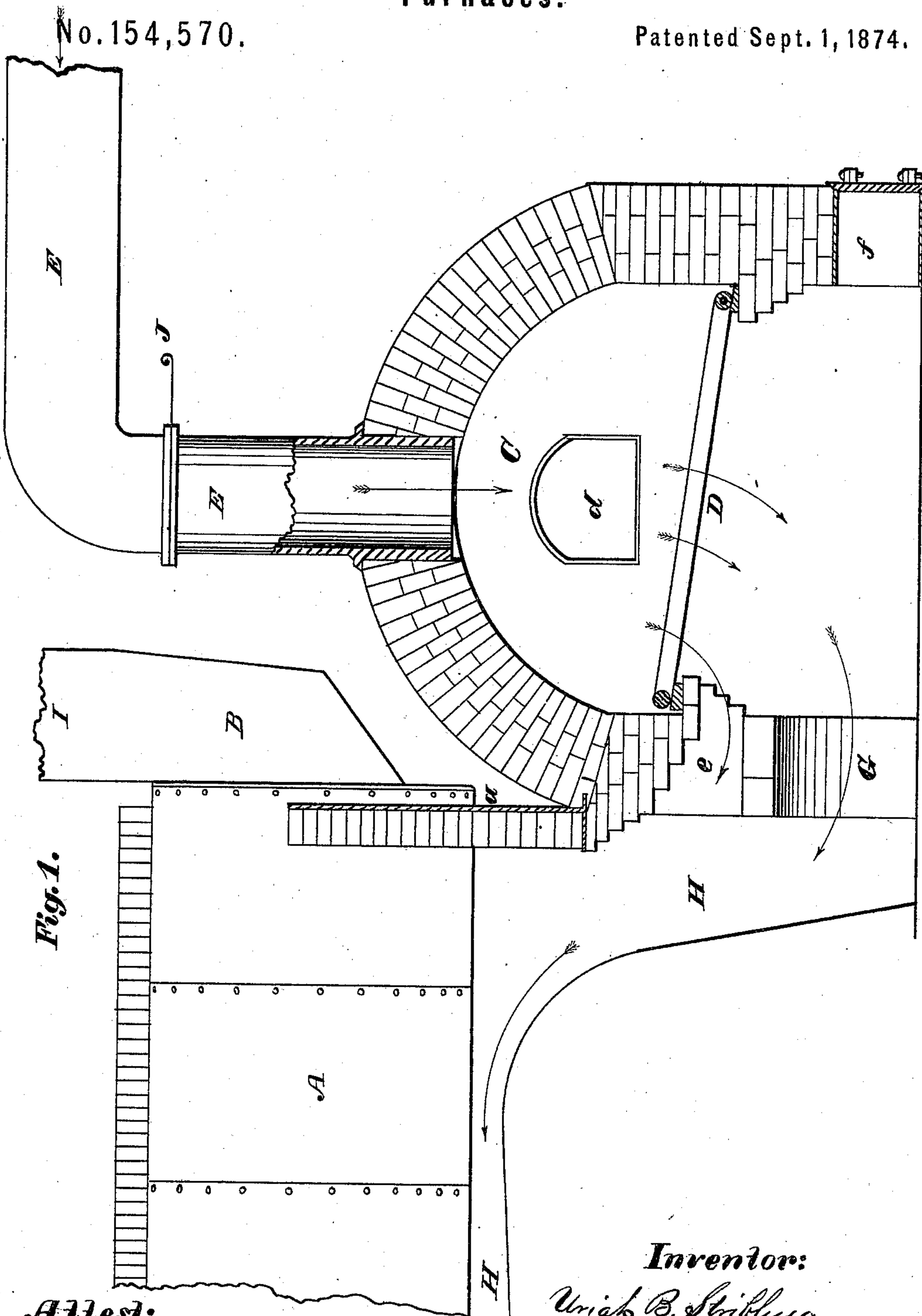


Fig. 1.

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Fig. 2.

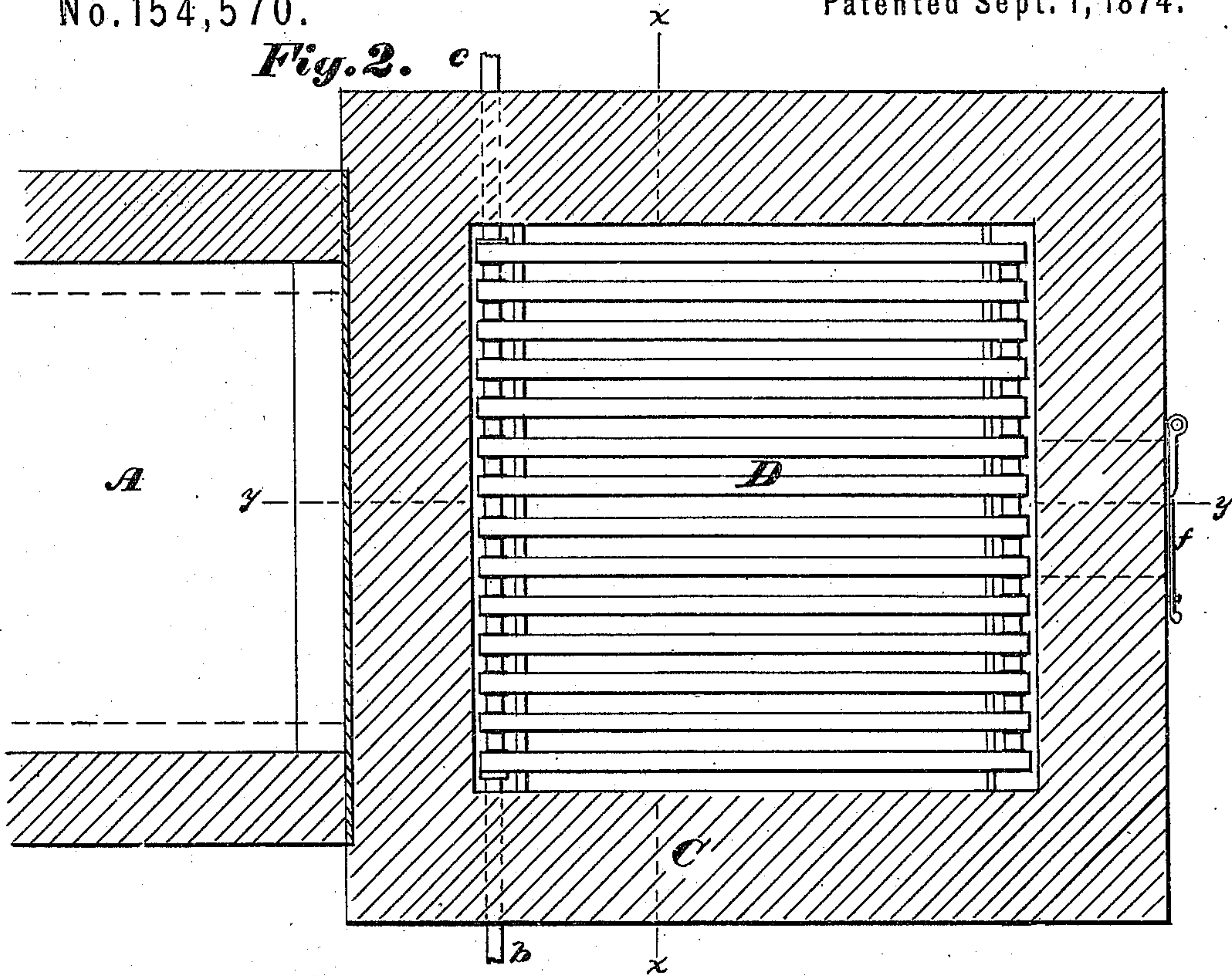
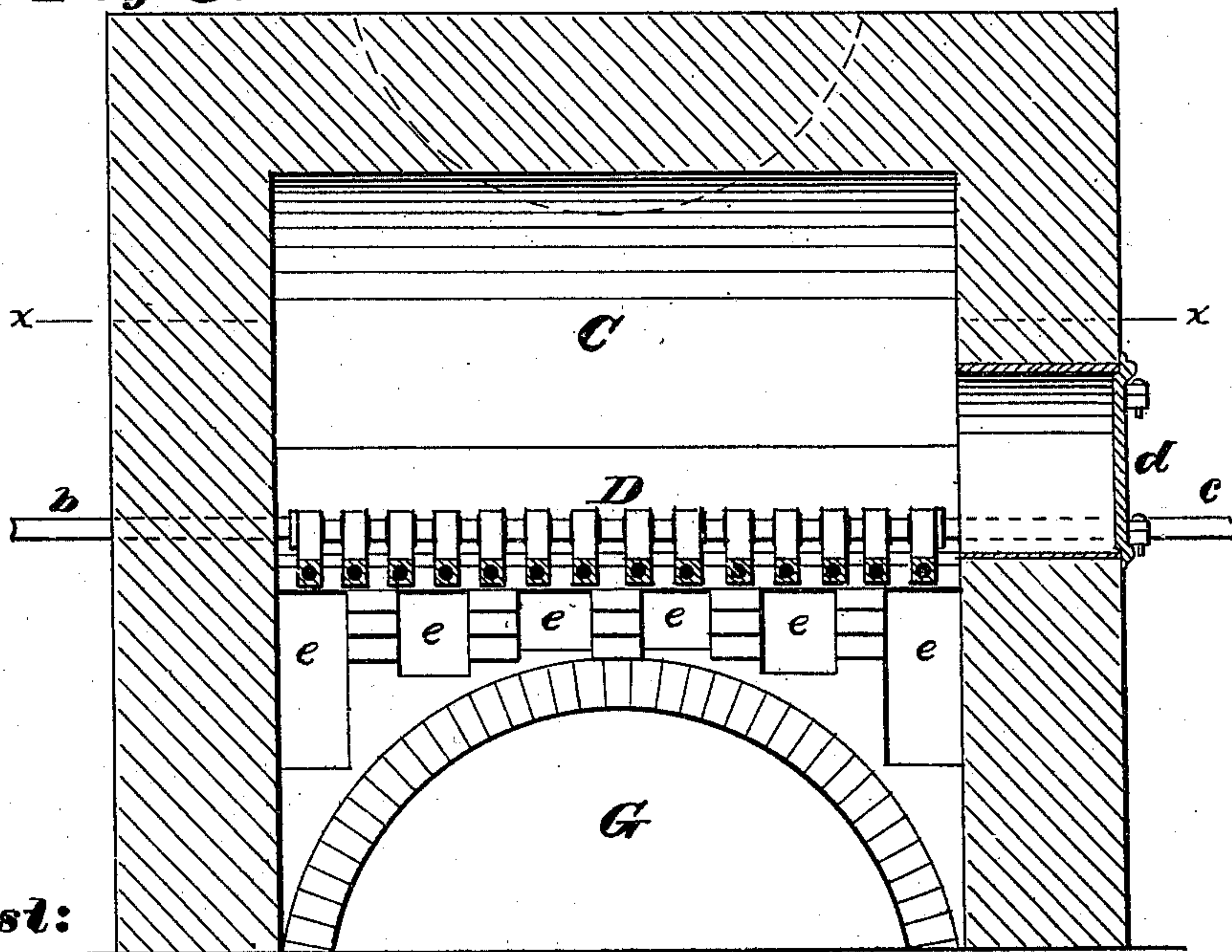


Fig. 3.



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Fig. 4.

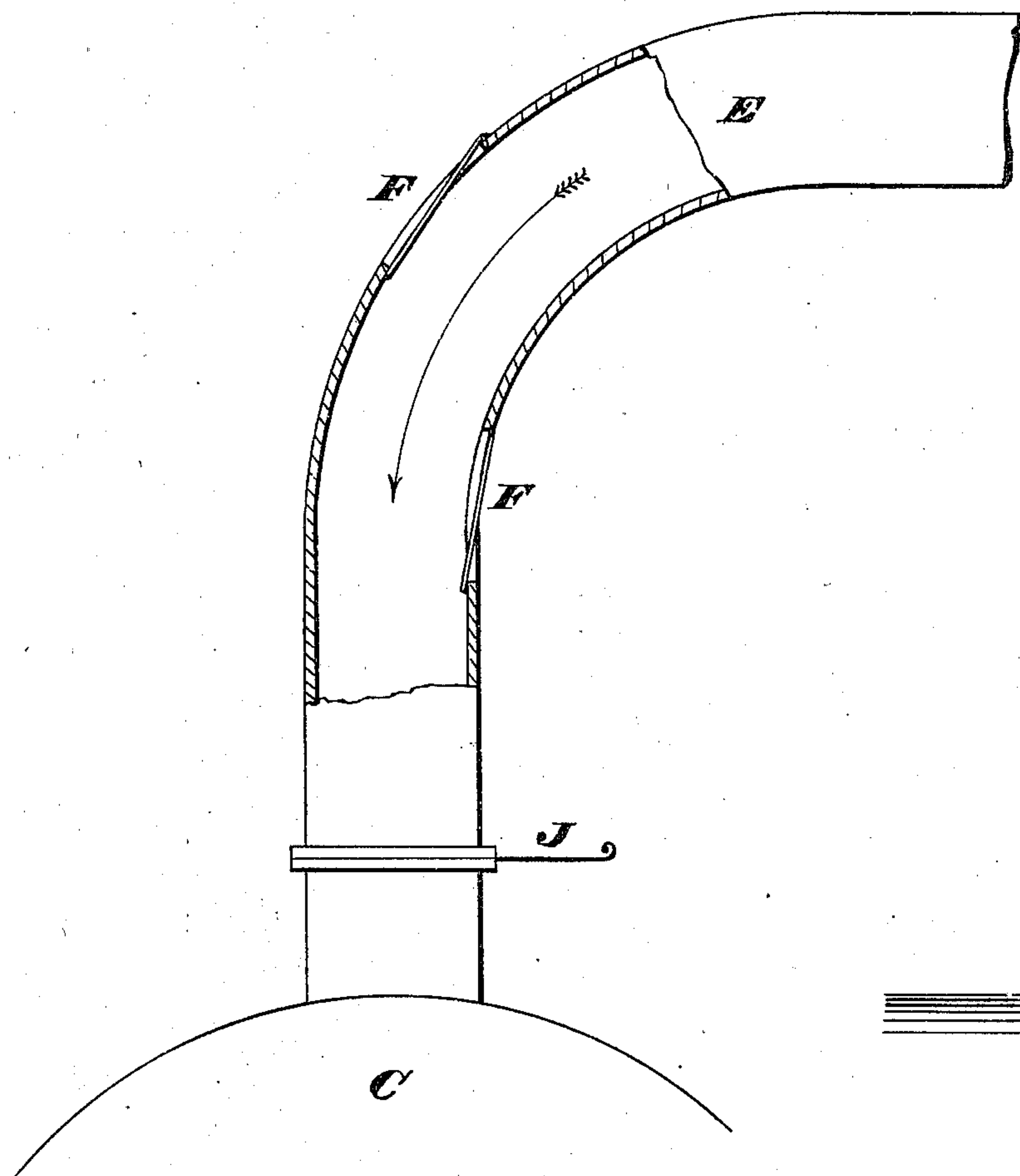
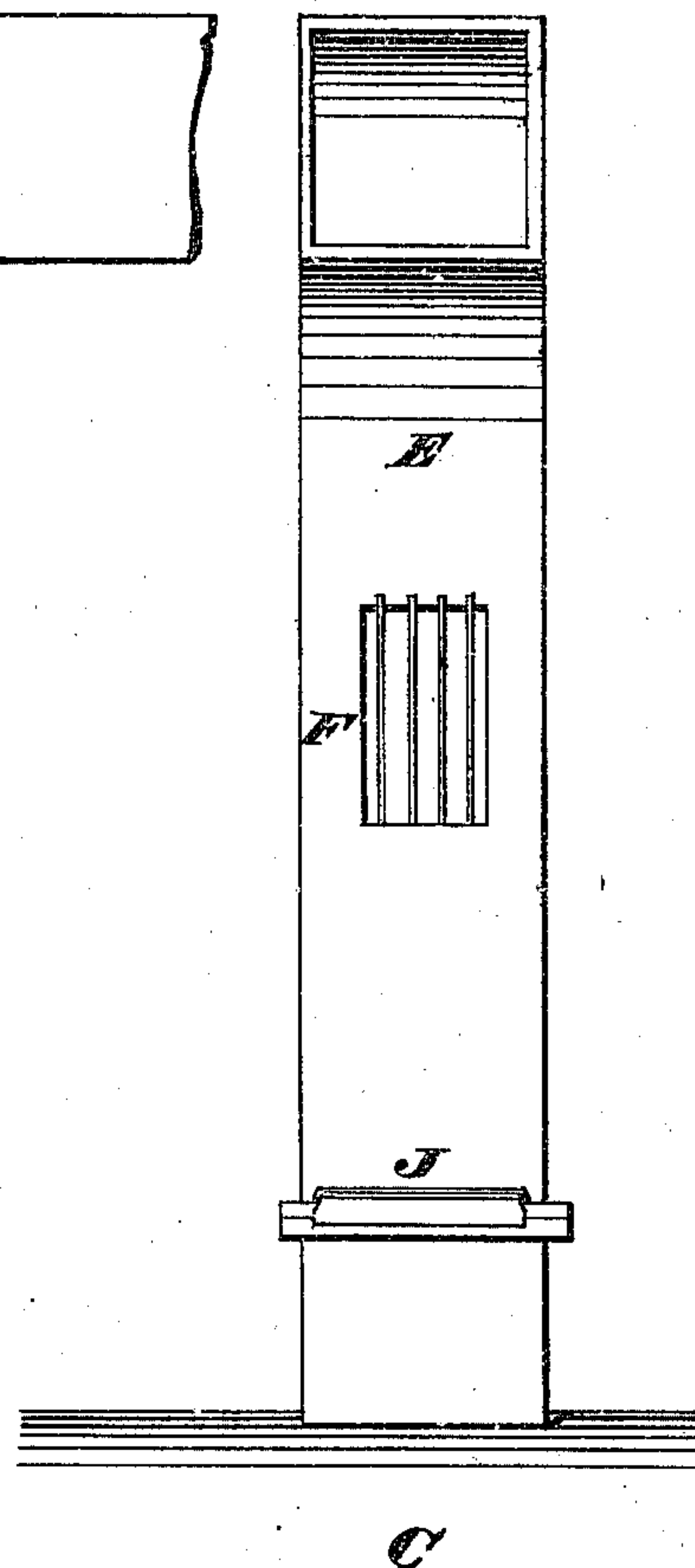


Fig. 5.



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UNITED STATES PATENT OFFICE.

URIAH B. STRIBLING, OF MADISON, INDIANA, ASSIGNOR TO HIMSELF AND
WILLIAM S. WYMOND, OF SAME PLACE.

IMPROVEMENT IN FURNACES.

Specification forming part of Letters Patent No. 154,570, dated September 1, 1874; application filed
June 1, 1874.

To all whom it may concern:

Be it known that I, URIAH B. STRIBLING of Madison, in the county of Jefferson and State of Indiana, have invented certain Improvements in Furnaces, of which the following is a specification:

This invention is a furnace that will receive shavings and other light particles of wood, drawn by a fan or blower from wood-working machinery, or from a deposit, and burn them under the influence of the forced draft created by the fan, for generating steam, or any kindred purpose.

In the drawings, Figure 1 is a longitudinal vertical mid-section of my invention on the plane of the line *yy* in Fig. 2. Fig. 2 is a horizontal section on the plane of the line *xx* in Fig. 3. Fig. 3 is a vertical cross-section on the plane of the line *xx* in Fig. 2.

The most important features of my invention consist in receiving the shavings through a nearly-vertical delivery-tube, whence they fall, or are forced by the blast, down upon the grate-bars in a furnace, upon which they are consumed, the draft being down through the grate, and thence under the boiler, and back through the flues to the stack. The surplus air from the blast passes off at gratings in the receiving-tube, either at the curve in said tube, or in the vertical portion of the same.

Figs. 4 and 5 are, respectively, sectional and plane views of the receiving-tube.

In the drawings, I have shown the furnace adapted to heating an ordinary return-flue cylindrical boiler. Let *A* represent such a boiler, *B* the breeching, and *a* the fire-front. *C* is a brick furnace-chamber, which may be rectangular in plan, and arched, as shown. *D* is the grate-surface or fire-bed, which I prefer to set inclined at about the angle and in the manner shown. As the heat is very intense under the influence of the blast, I use hollow grate-bars, connected at their extremities by short sections of tubing or gas-pipe, so as to open communication between their interiors, and keep up a current of water through them, said water entering at the pipe *b*, and passing out at the pipe *c*. *E* is a receiving-tube, of any suitable material, leading from an ordinary blower, (not shown,) but such as are in common use

for removing shavings, &c., from wood-working machinery. The actual construction of this tube is best shown in Figs. 4 and 5, the curve of that in Fig. 1 being too sharp from lack of room. The receiving-tube enters the crown of the chamber *C* about at the center, in a nearly-vertical direction, so as to direct the fuel properly upon the grate. In the front and rear faces of the tube *E* are located waste-openings or gratings *F F*, being rectangular openings in the tube, with strands of coarse wire stretched vertically across them, too close to admit of the passage of shavings, but wide enough to allow the passage of air freely. The wires should be secured to the outside of the tube at the top, and to the inside at the bottom, so as not to present points or ledges for the shavings to catch on. It is important that these openings be placed below the horizontal portion of the tube, so that the shavings may be assisted in their descent by gravity, and be assured of their destination before reaching the openings *F*; otherwise the latter may become clogged by the shavings. It is also important that the full force of the blast act upon the matter to be conveyed until it reaches the point of descent, where less power is required to carry it.

The fire is kindled upon the grate *D* through the door *d*, which is then closed tight. The blast drives the shavings from the machines, in the direction of the arrow, through the tube *E*, and down upon the grate, where the fire has been kindled. This stops the fuel, and the flame is driven down through the grate, and thence, in the direction of the arrows, through the arch *G* and openings *e e* in the back wall of the furnace-chamber *C*, into the fire-space *H*; thence to the rear of the boiler, to return, through the boiler-flues, to the chimney *I*.

The waste-openings *F F* should be properly regulated as to size to avoid undue air-pressure on the grate *D*. The vertical blast effectually prevents the escape of sparks through the said waste-openings.

The ashes are removed from time to time through the door *f*, which is kept closed when not in use.

A shut-off slide, *J*, is provided in the vertical portion of the tube *E*, which is used to cut off

communication between the blower and the furnace when the former is not running, and there is yet fire in the latter.

So far as my knowledge extends, up to this time all attempts to direct the shavings, &c., from the blower into the furnace have failed, for the reason that a blast that would convey the fuel was too strong, and when directed onto the ordinary furnace-grate would carry sparks and half-burnt fuel out of the chimney. With my device any degree of blast may be used, as the surplus is led off after its duty is done; and by directing the draft almost perpendicularly down through the grate combustion is rendered perfect, and sparks avoided almost entirely.

My object in inclining the grate-surface slightly to the direction of the blast is, that the heap of burning fuel may topple over as it burns, and not present too much obstruction to the draft.

I do not claim the blower or fan, nor the horizontal portion of the tube E, for these are in common use; but

What I claim is—

1. In a furnace, the combination of the following three elements: A vertical forced feed-draft, carrying light fuel, a fire-bed or grate, D, and a furnace-chamber, C, provided with openings G e e, for the passage of the products of combustion to the combustion-chamber beneath the boiler, said openings being entirely below the grate, all arranged to operate substantially as shown, and for the purpose specified.

2. The combination of the furnace-chamber C, provided with passages or openings (below the fire-bed) G e e, the grate or fire-bed D, and vertical receiving-tube E, provided with waste-openings F F, constructed and arranged to operate in connection with a blower and conveyer-tube for shavings, &c., substantially as shown, and for the purposes specified.

URIAH B. STRIBLING.

Witnesses:

J. C. MOORE,

HENRY CONNETT, Jr.