

W. YOUNG.

Grate, Fire Place, and Furnace.

No. 71,260.

Patented Nov. 19, 1867.

Fig. 1.

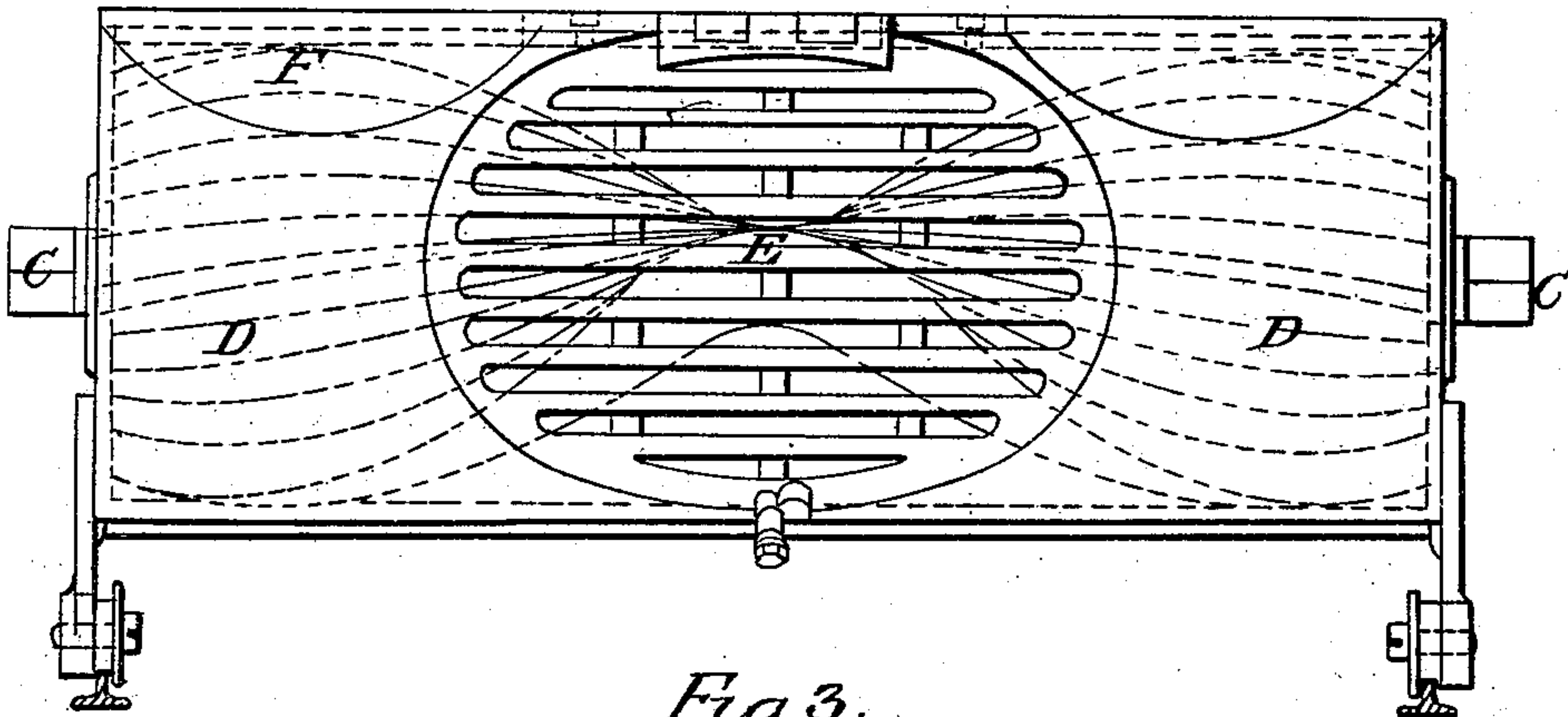


Fig. 3.

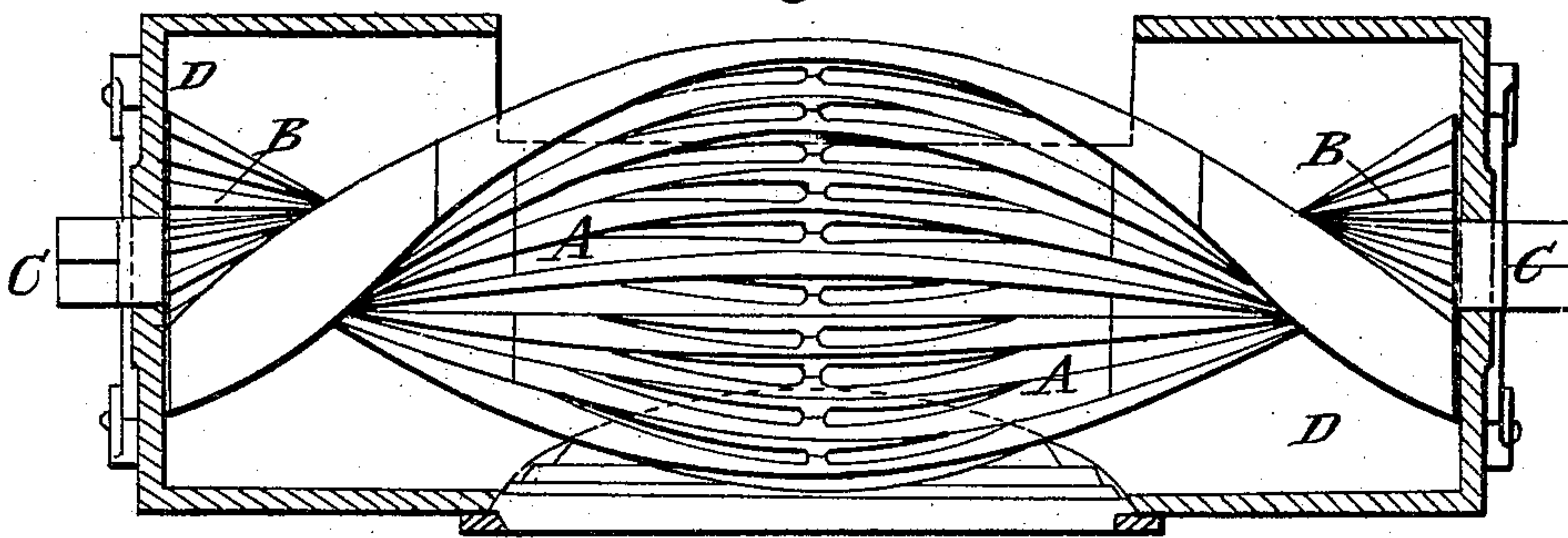
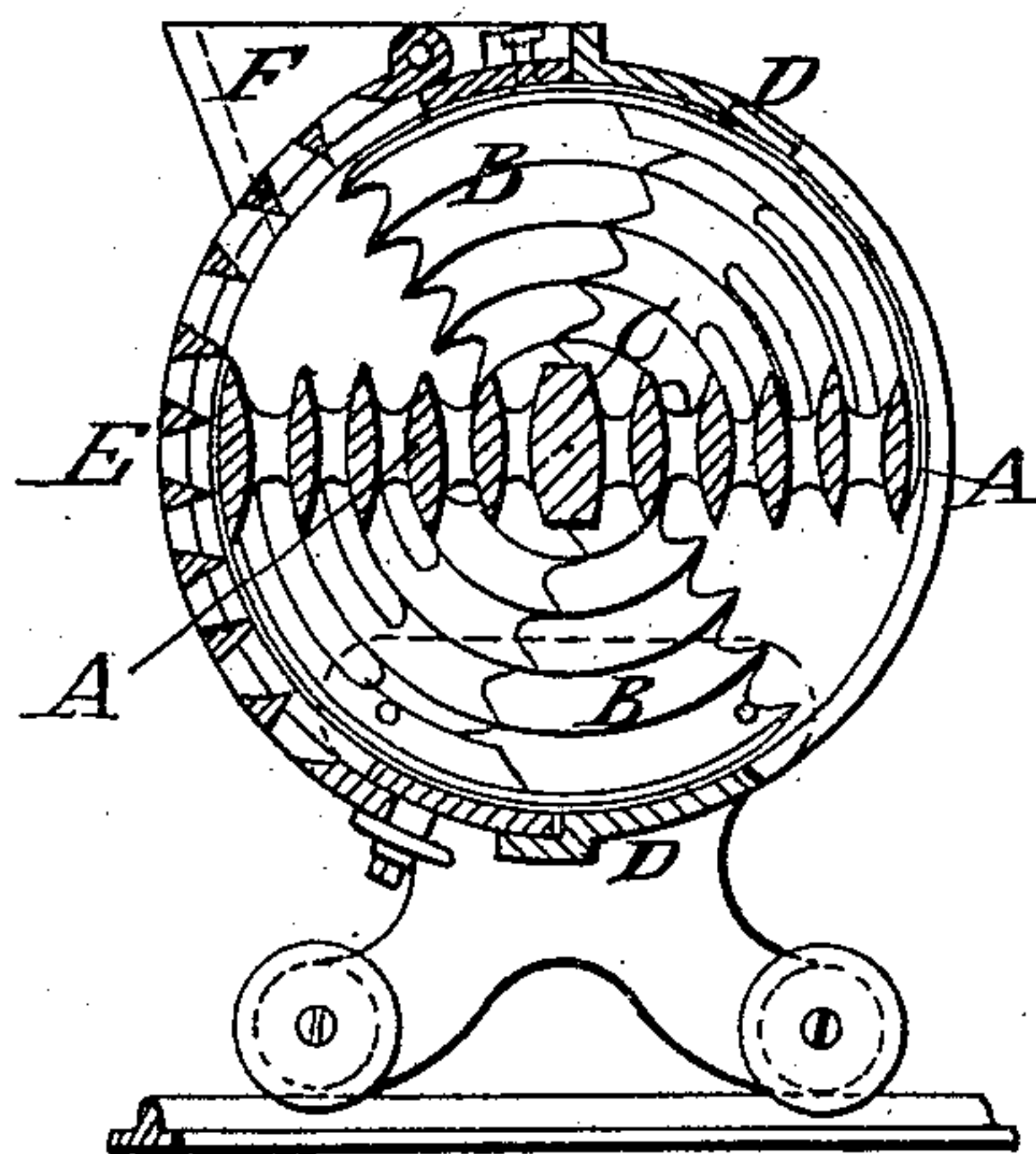


Fig. 2.



Witnesses:

William H. Young
H. W. Jackson

Inventor:

William Young

United States Patent Office.

WILLIAM YOUNG, OF LONDON, ENGLAND.

Letters Patent No. 71,260, dated November 19, 1867; patented in England, April 11, 1866.

IMPROVEMENT IN GRATES, FIREPLACES, AND FURNACES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM YOUNG, of 34 Queen street, Cheapside, in the city of London, lamp manufacturer, have invented "Improvements in and Applicable to Grates, Fireplaces, and Furnaces;" and I do hereby declare that the following is a full and exact description of my said invention.

My invention, of "improvements in and applicable to grates, fireplaces, and furnaces," consists in the use of a series of spiral bars formed into a screw or incline, with spaces in it for the double purpose of admitting air to the fuel and raising the fuel to the fire.

When adapted and applied to grates, the series of spiral bars, forming a screw or incline, with spaces in it, may be used in combination with only a top bar, thereby answering the purpose of the ordinary bottom bars for supporting the fuel, and also of the intermediate front bars of the grate. The fresh fuel is supplied to a box in which the spiral bars are mounted, so as to admit of their being turned, as required, in order to raise such fuel into the fire. The spiral bars may be made hollow, for the purpose of allowing water to pass through them from a cistern to furnish a supply of hot water.

And when the spiral bars are adapted and applied to furnaces, they are inserted at the front or other suitable part of the fireplace. The spiral bars are mounted, as required, and caused to revolve at a slow speed by hand, or by means of suitable gearing. The fresh fuel is fed into a hopper or chute in front, or into one on each side, and is conveyed to the lower part of the screw or incline formed of spiral bars, by the revolution of which screw or incline the fuel is raised up, as required, into the fire, the air for supporting combustion passing through the spaces between the spiral bars.

The said screw or incline, with spaces in it, when applied to either of the above-named purposes, may be constructed in separate spiral bars, fixed together, with intervals between them, or it may be constructed so as to consist practically of a series of spiral bars, with spaces between them, cast or formed in one piece.

Having thus stated the nature of the said invention, I will proceed to describe more particularly in what manner the same is to be performed, by reference to the accompanying drawings, in which is represented a screw or incline, with spaces in it, formed of spiral bars, and applicable both to grates and furnaces.

Description of the Drawings.

Figure 1 is a longitudinal elevation of a metal box, in which are mounted spiral bars, with a screw-conveyer at each end.

Figure 2 is a transverse vertical section of the same, through the bars at the central rib, formed by the junctions thereof.

Figure 3 is a horizontal section of the metal box, showing the spiral bars and screw-conveyer in plan.

In these several figures the same letters of reference indicate corresponding parts.

A A are the spiral bars, which may be either made separately, and united at their ends, or they may be cast in one piece, as a screw or incline, with spaces in it, through which air will pass, as required. B B are two screw-conveyers, one at each end of the series of spiral bars, for the purpose of conveying the fuel deposited thereon to the spiral bars, as they are caused to revolve, by turning the axis C, to which they and the spiral bars are fixed. These screw-conveyers are preferred to be grooved, as shown in figs. 2 and 3, but their surfaces may be plain, as an ordinary screw-conveyer.

The spiral bars A and screw-conveyers B B, fixed on an axis, C, are mounted in a metal box, D, which has two openings in it, one at the front, for the admission of air to the spiral bars, and another at the back, leading to the fireplace or the furnace, as the case may be. The opening in front is covered by a hinged door, E, with horizontal spaces in it. There are also openings or hoppers F F at the top, through which fuel is supplied on to the screw-conveyers B B. The fireplace or furnace, at the back of the box D, consists of an inclined bed of fire-brick, on which the fuel is burned.

It will thus be seen that, on fuel being supplied to the conveyers B B, through the hoppers F F, and on the axis C being turned, the fuel will be conveyed to the bottom and central part of the spiral bars, and by the continued revolution of the spiral bars, it will be worked forward through the opening at the back of the box D, and on to the inclined bed of the fireplace, on which the burning fuel rests. It will also be seen that the air will pass through the spiral bars A, and support the combustion of the fuel on the said inclined bed.

The section of the spiral bars, as shown in fig. 2, is such as to admit of the free passage of air, in divided streams, to the burning fuel, and such section is, for that reason, preferred. But the section of the said bars, and their distance apart, may be varied.

The spiral bars, as shown, may be adapted and applied either to a fireplace, in substitution for an ordinary grate, or to a furnace, and the general arrangement of the parts, with the mode of working them, will be readily understood from the foregoing description. It is to be observed, however, that the arrangement of mechanism for working the spiral bars, when applied to furnaces, is adapted to produce a motion of the axis C at shorter intervals than is required when applied to grates, or the mechanism may be adapted to produce a continuous slow motion of the said axis.

Having thus described the nature of the said invention, and in what manner the same is to be performed, I would remark that the pitch of the screw of spiral bars may be varied from that shown in the drawings, and the screw-conveyers, at each end of the spiral bars, may be dispensed with without departing from the principle of my invention. But I hereby declare that what I claim as of my invention is—

The application to grates, fireplaces, and furnaces, of spiral bars, adapted for the double purpose of feeding and raising the fuel to the fire, and admitting air to the fuel, as hereinbefore described.

In witness whereof, I, the said WILLIAM YOUNG, have hereunto set my hand and seal the tenth day of July, in the year of our Lord one thousand eight hundred and sixty-seven.

WILLIAM YOUNG. [L. s.]

Witnesses:

WILLIAM SPENCE, 8 *Quality Court, Chancery Lane, London.*

W. WYNN, 24 *Royal Exchange, London.*