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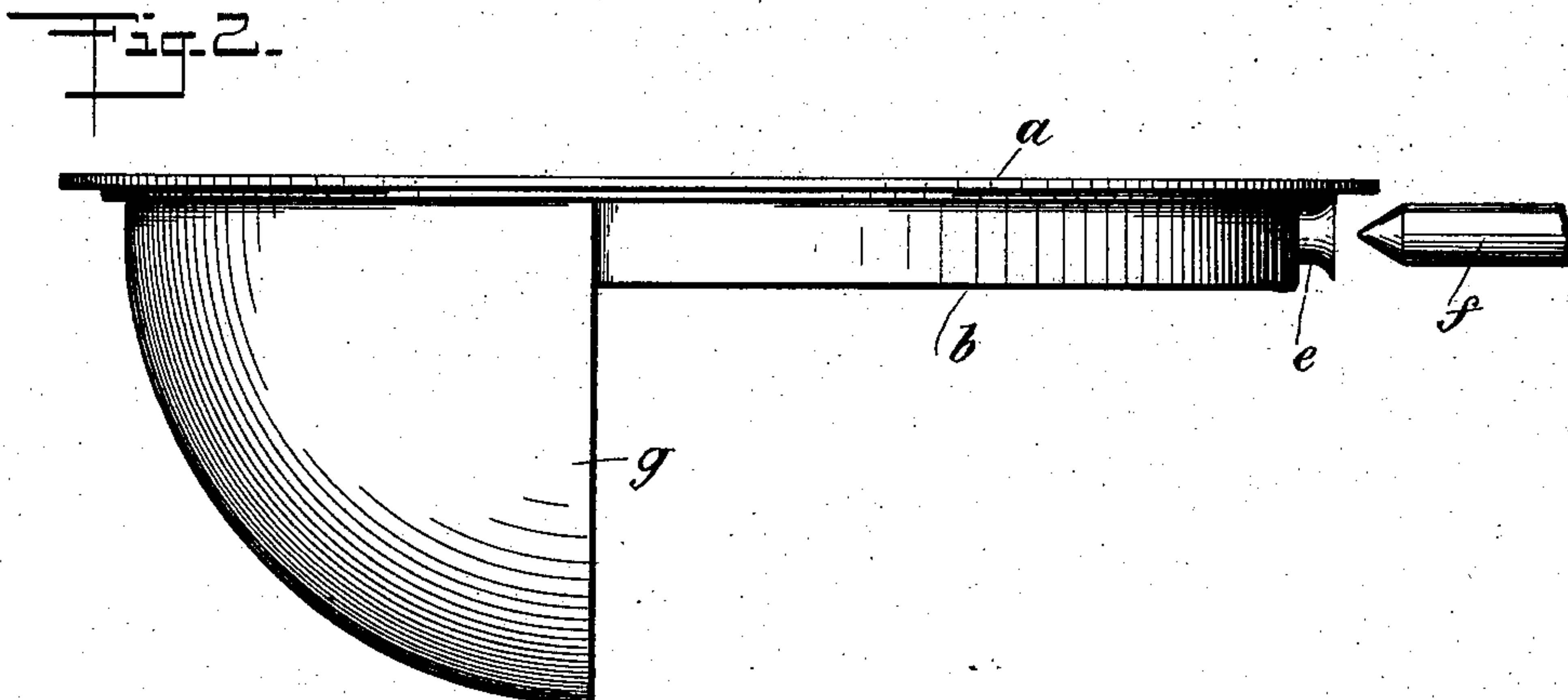
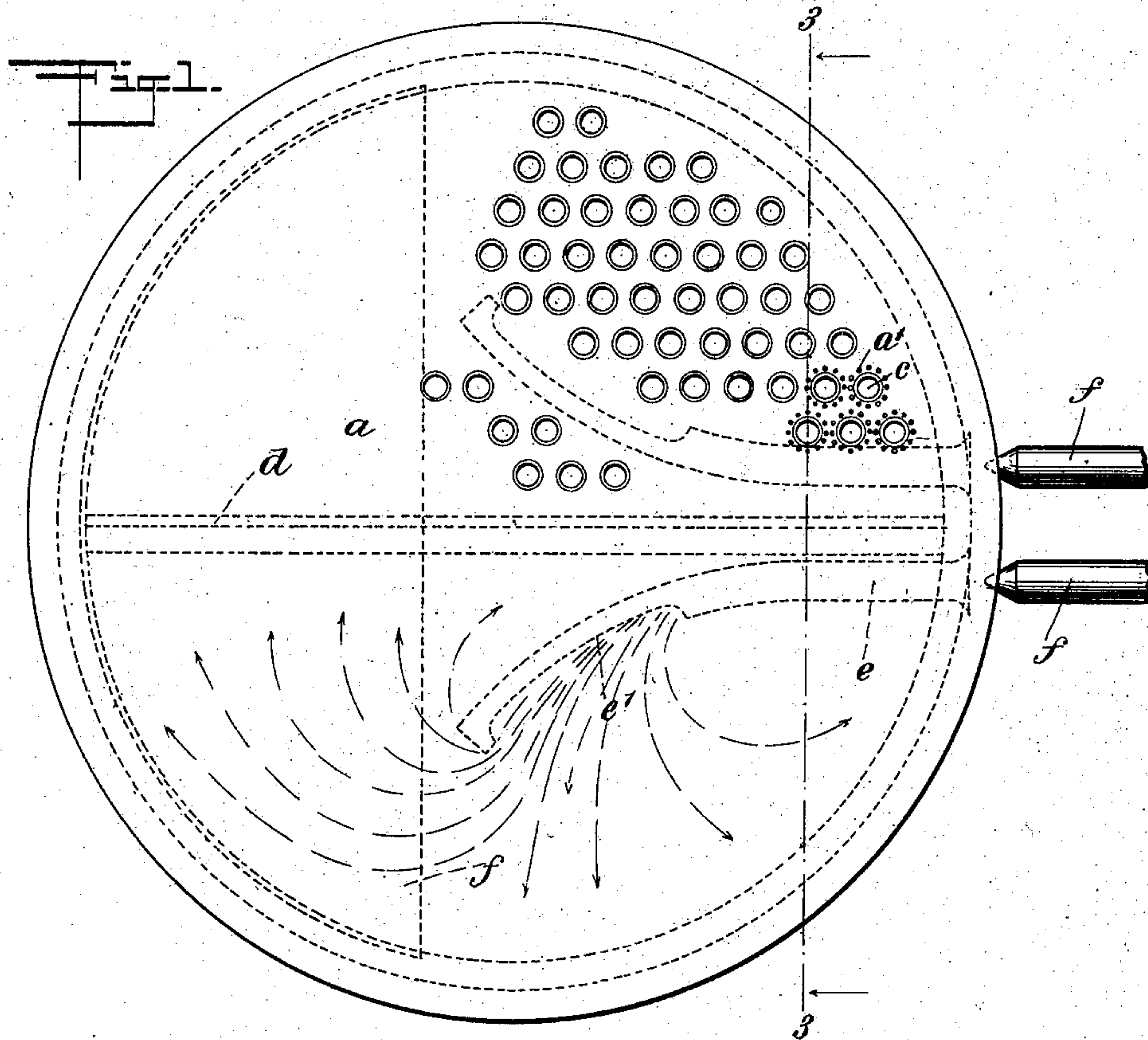
PATENTED OCT. 13, 1903.

G. C. CANNON.
FURNACE.

APPLICATION FILED NOV. 25, 1901.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

A. Russell Bond.
J. B. Owens.

INVENTOR
George C. Cannon
BY *Mumford*
ATTORNEYS.

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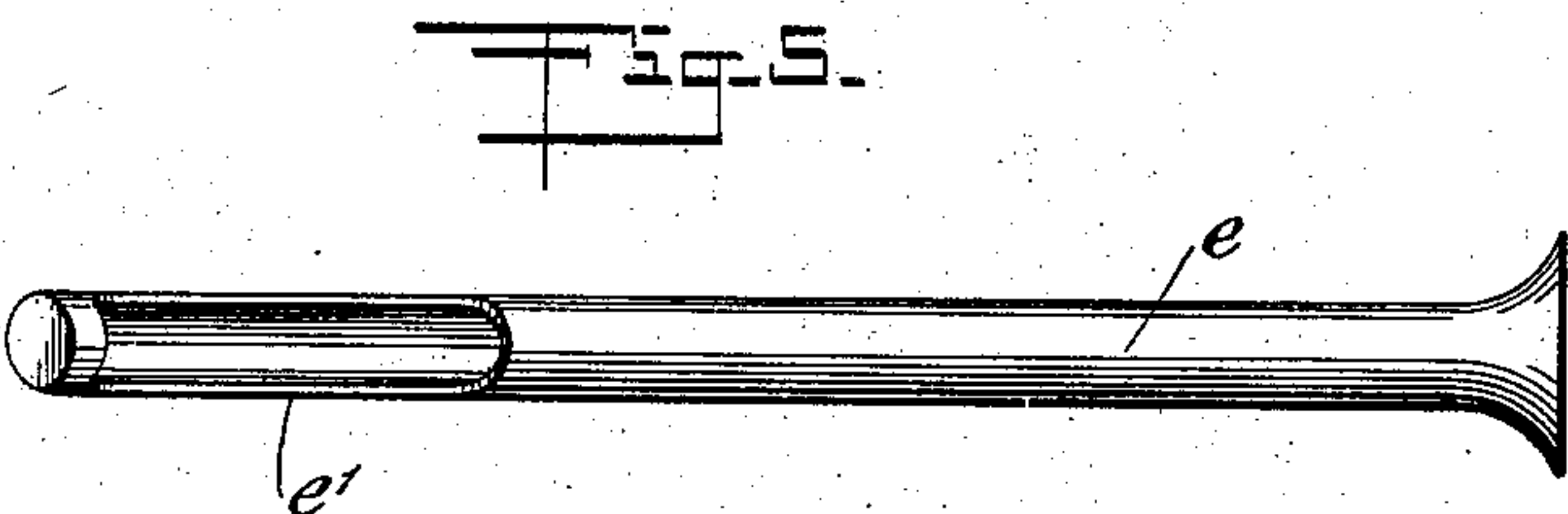
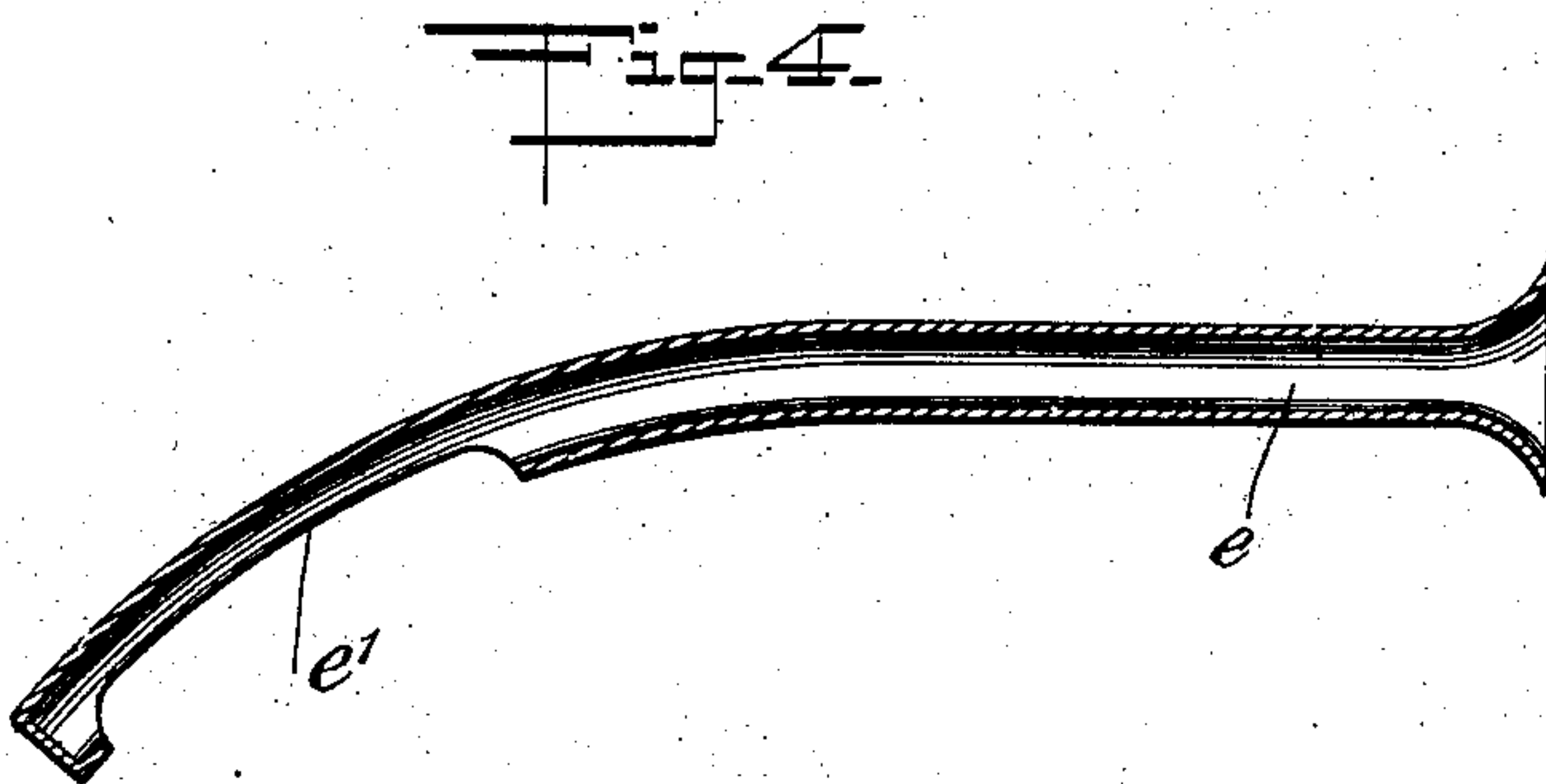
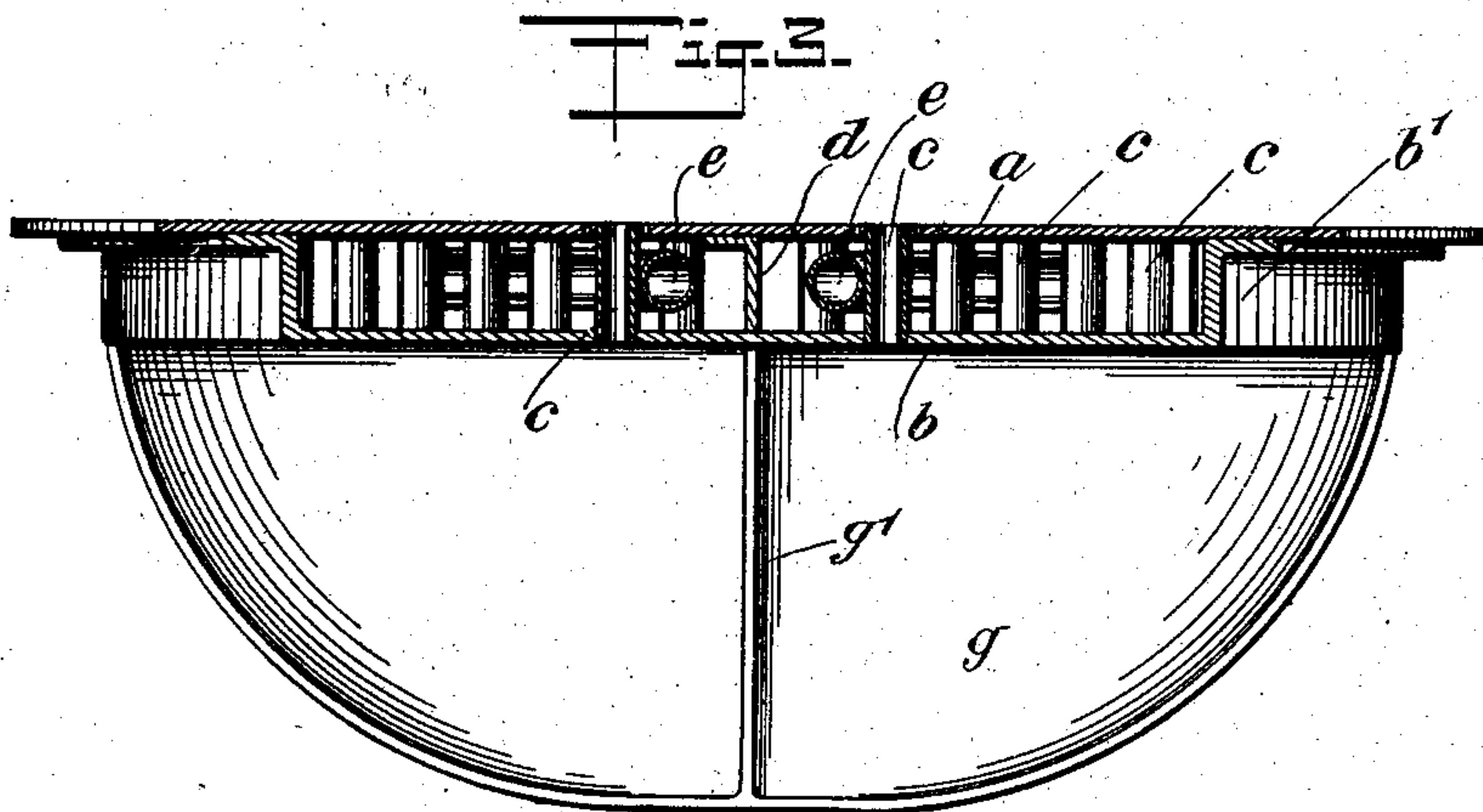
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UNITED STATES PATENT OFFICE.

GEORGE CURTIS CANNON, OF NEW YORK, N. Y.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 741,456, dated October 13, 1903.

Application filed November 25, 1901. Serial No. 83,569. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CURTIS CANNON, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Furnace, of which the following is a full, clear, and exact description.

This invention relates to a furnace adapted for burning gaseous fuel.

The furnace is intended primarily for use in connection with the boilers of steam automobile vehicles, although it may be used in other connections, as will be obvious to persons skilled in the art.

This specification is a specific description of one form of the invention, while the claims are definitions of the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the furnace. Fig. 2 is a side elevation thereof. Fig. 3 is a sectional elevation on the line 3-3 of Fig. 1, and Figs. 4 and 5 are detail views of the gas-tubes.

The furnace comprises a top plate *a* and a bottom plate *b*, these two plates being spaced apart to form a gas-chamber between them, and the plate *b* having a marginal flange *b'*, which extends upward and is fastened to the plate *a*. Extending between the plates *a* and *b* and across the aforesaid gas-chamber are tubes *c*, which are hermetically connected with the plates *a* and *b* and form air-passages through them from the bottom of the plate *b* to the top of the plate *a*.

The plates *a* and *b* are preferably of circular form and consequently the gas-chamber above referred to is of a circular shape. Extending diametrically across this chamber is a partition *d*, dividing the gas-chamber into two parts, and in each part of this chamber is located a gas-supply tube *e*. These tubes are best shown in Figs. 1, 4, and 5. The tubes extend inward from the periphery of the gas-chamber and curve outward oppositely to each other, as indicated by the dotted lines in Fig. 1. In their concave or outer sides are formed openings *e'*, which extend along the lengths of the tubes at their curved portions.

f indicates the pipes which supply the gas

to the tubes *e*, these pipes being arranged in the usual manner, so that a mixture of gas and air will be entered into the tubes *e*. In the top plate *a*, in circles surrounding the tubes *c*, are formed numerous minute perforations *a'*, which constitute passages for the gas as it passes from the chamber between the plates *a* and *b*. Air passes from beneath the furnace through the tubes *c*, and the combustible mixture from the tubes *e* passes through the perforations *a'*, so that the tubes *c* furnish ample oxygen for the combustion of the gas. By means of the gas-conducting tubes *e* of the peculiar form shown the gas is effectively distributed throughout the gas-chamber and the entire surface of the furnace is caused to yield a uniform heat. The tubes *e* are curved and open along their concave sides, so that the gaseous mixture when forced through the tubes will strike the concave inner surfaces opposite the openings *e'* and be deflected through the openings. Owing to the concurrent action, first, of the forces behind the gas acting as the latter moves through the straight parts of the tube and, second, to the above-referred-to concave inner surface, the gas in striking the concave surface is deflected sideways and caused to pass from the tube with a swirling divergent motion and spreads through the gas-chamber, as the dotted lines of Fig. 1 indicate. This action is assisted by the curved side walls of the gas-chamber and by the tubes *c*.

The partition *d*, extending through the gas-chamber between the plates *a* and *b*, divides the chamber into two parts, to which the gas-tubes *e* are respectively related. It will be observed that these tubes diverge from this partition, and, as indicated by the arrows in Fig. 1, the gas from the tubes is, owing to the peculiar form thereof, spread equally throughout each semicircular chamber to which the gas-tubes are devoted. The partition *d* forms practically two gas-chambers, and a tube *e* is fitted to each. This enables the gas-supply to be exactly doubled over that usually given in this specific class of apparatus. (See, for example, the patent to Stanley and Stanley, No. 637,176, dated November 14, 1899.) The partition *d* prevents confusion between the two currents of gas from the two tubes *e* and allows the distribution of

the gas under the action above described to go on uninterruptedly.

When the invention is applied to automobiles or other vehicles, a scoop *g* is used. This
5 scoop is arranged in the rear side of the furnace and opens forwardly, so that the vehicle in running ahead will, so to speak, scoop the air into the furnace, so as to increase the draft thereof, this air being visible through
10 the tubes *c*, for the purpose before explained. This scoop is preferably shaped as a section of a sphere, although it may have other form, if desired, and it is fastened to the bottom plate *b* in any suitable manner. A partition
15 *g'* is situated in the scoop, and this partition corresponds with the partition *d*, above referred to, so as to divide the scoop into two parts corresponding to the two parts of the gas-chamber.

20 It will be obvious that in the operation of this invention the peculiar form of the gas-tubes *e* will thoroughly distribute the gaseous fuel throughout the gas-chamber and that as the vehicle gathers way the scoop will
25 increase the draft through the tubes *c*, thus increasing the intensity of the combustion at the upper surface of the plate *a*. It will be understood, of course, that the boiler is located above the furnace and may be of any
30 approved construction.

Various changes in the form and details of my invention may be resorted to at will without departing from the spirit of my invention. Hence I consider myself entitled to all
35 forms of the invention as may lie within the intent of my claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

40 1. A gas-burning furnace having a gas-chamber, and two gas-supply tubes in said chamber and curved divergently from each other and each having a gas-discharge opening therein, said openings being elongated longitudinally of the tubes and through which
45 openings the gas is discharged to be consumed.

2. A gas-burning furnace having a gas-chamber, and two gas-supply tubes in said
50 chamber and curved divergently from each other and each having a gas-discharge opening in its concave-curved side, said openings being elongated longitudinally of the tubes and through which openings the gas is dis-
55 charged to be consumed.

3. A gas-burning furnace having a gas-chamber with a partition extending through it to divide it into two parts, and gas-supply tubes extending respectively into said parts
60 of the gas-chamber, said tubes being curved away from the partition and each tube having a gas-discharge opening in its concave side, said openings being elongated longitudinally of the tubes and through which open-
65 ings the gas is discharged to be consumed.

4. A furnace for vehicles, having a gas-chamber discharging from its upper side, a

partition in said chamber and dividing it into two parts, air-tubes passing through the chamber from the bottom to the top thereof, 70 a scoop extending downward from the rear of the furnace and projecting forwardly under the same to induce currents of air upward through the air-tubes, means for supplying gas to each part of the gas-chamber, said 75 means comprising a gas-tube leading into each part of the chamber, and said tubes being curved sidewise from the partition and having each an opening in its concave side, for the purpose specified. 80

5. A gas-burning furnace having a gas-chamber, and two gas-supply tubes in said chamber and curved divergently from each other, each tube having a gas-discharge opening in its concave side, and through which 85 openings the gas is discharged to be consumed.

6. A gas-burning furnace having a gas-chamber, a partition extending across the chamber and dividing it into two parts, and 90 two gas-supply tubes respectively in said parts of the gas-chamber, said tubes being curved away from the partition and each tube having a gas-discharge opening in its concave side, and through which openings the gas is 95 discharged to be consumed.

7. A gas-supply tube for gas-burning furnaces, said tube being of essentially uniform diameter and having an open end adapted to have the gas passed thereinto and through the 100 tube toward the other end portion, and said other end portion being curved and having a gas-discharge opening in its concave side through which to discharge the gas with a swirling motion to the burner. 105

8. A gas-burning furnace, comprising the combination of walls forming a gas-chamber of relatively large area and slight depth, said chamber having a plurality of openings there- 110 in for the escape of the gas to be burned, and a gas-supply tube projected into the chamber and curved in the plane thereof, said tube having a gas-discharge opening in its concave side, and through which opening the gas is discharged to be consumed. 115

9. A gas-burning furnace, comprising the combination of walls forming a gas-chamber of relatively large area and slight depth, said chamber having a plurality of openings there- 120 in for the escape of the gas to be burned, a partition extending through said chamber to divide it into two parts, and two gas-supply tubes projecting respectively into said parts of the chamber and curved in the plane there- 125 of respectively away from the partition, each of said tubes having a gas-discharge opening in its concave side, and through which openings the gas is discharged to be consumed.

10. A gas-burning furnace having walls forming a gas-chamber with a plurality of 130 openings therein extending over the area of the top of the chamber for the escape of the gas to be burned, air-tubes extending through said chamber from bottom to top thereof, for

the purpose specified, and a gas-supply tube extended through the walls of the chamber into the interior thereof and orificed to discharge the gas sidewise from the tube in a current broadened in the direction of the length of the tube, whereby to spread the gas uniformly through the gas-chamber.

11. A gas-burning furnace having walls forming a gas-chamber with a plurality of openings therein extending over the area of the top of the chamber for the escape of the gas to be burned, air-tubes extending through said chamber from bottom to top thereof for the purpose specified, a partition in the chamber to divide it into two parts, and two gas-supply tubes extending through the walls of the chamber respectively into the interior of the said two parts thereof, and orificed at the sides removed from the partition to discharge the gas sidewise from the tubes in currents broadened in the direction of the length of the tubes, whereby to spread the gas uniformly throughout the gas-chamber.

12. A furnace for motor-vehicles having walls forming a gas-chamber of relatively large area and slight depth, said chamber having orifices in its upper side for the outlet of the gas, air-draft tubes extending through said gas-chamber upward from the bottom thereof, a partition in the chamber dividing it into two parts, means for supplying gas to each part of the chamber, a scoop attached to the rear edge of the furnace at the bottom thereof, said scoop curving forwardly around the furnace and extending downward and forward therefrom, the scoop being open at its front end for the purpose specified, and a vertical partition in the scoop corresponding with the partition in the gas-chamber.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. CURTIS CANNON.

Witnesses:

GEO. ROBB ELLISON,

DANIEL MANN EDWARDS, Jr.