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PATENTED MAR. 13, 1906.

F. E. YOUNGS.

DRAFT REGULATOR FOR HYDROCARBON BURNERS.

APPLICATION FILED OCT. 12, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

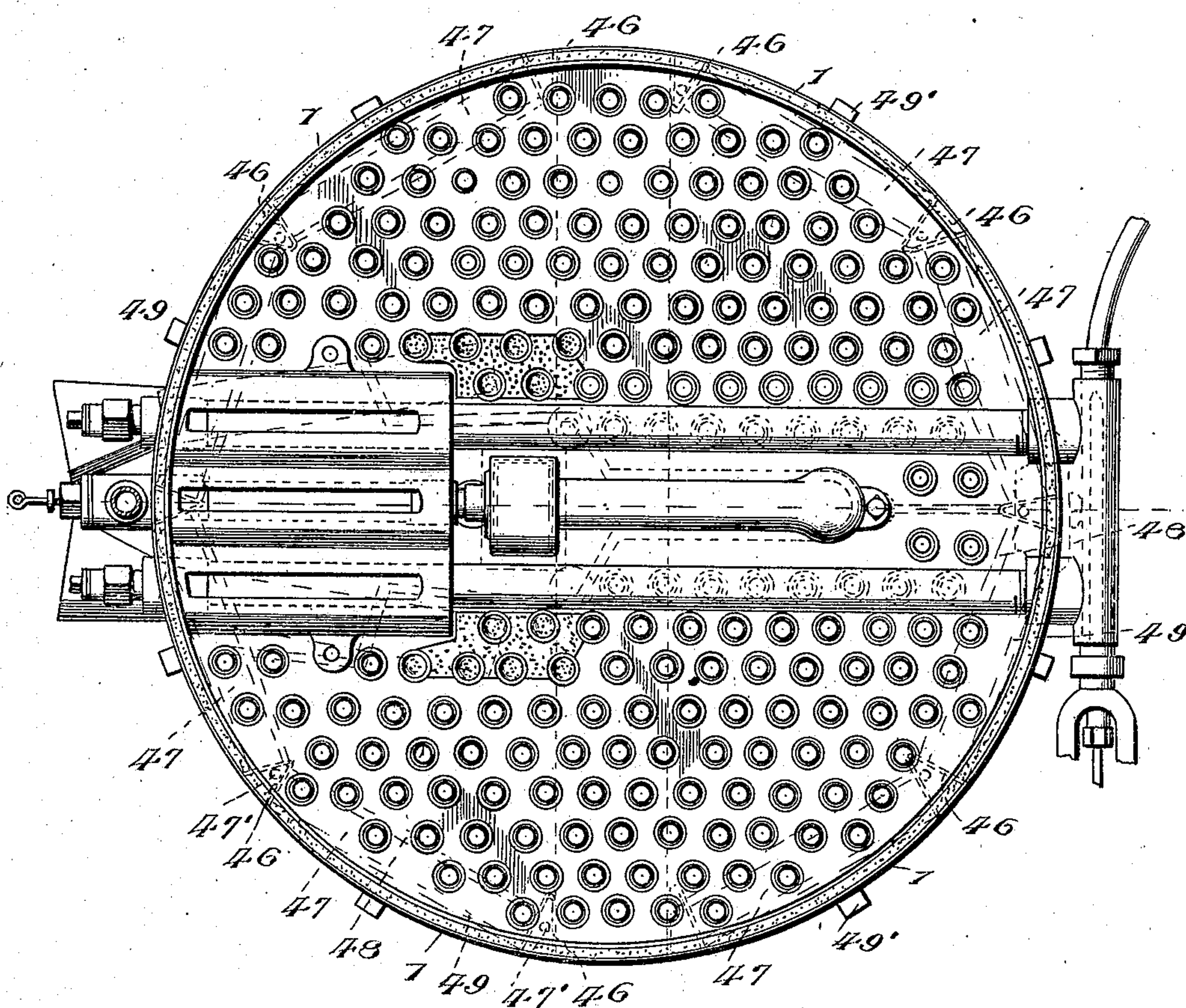
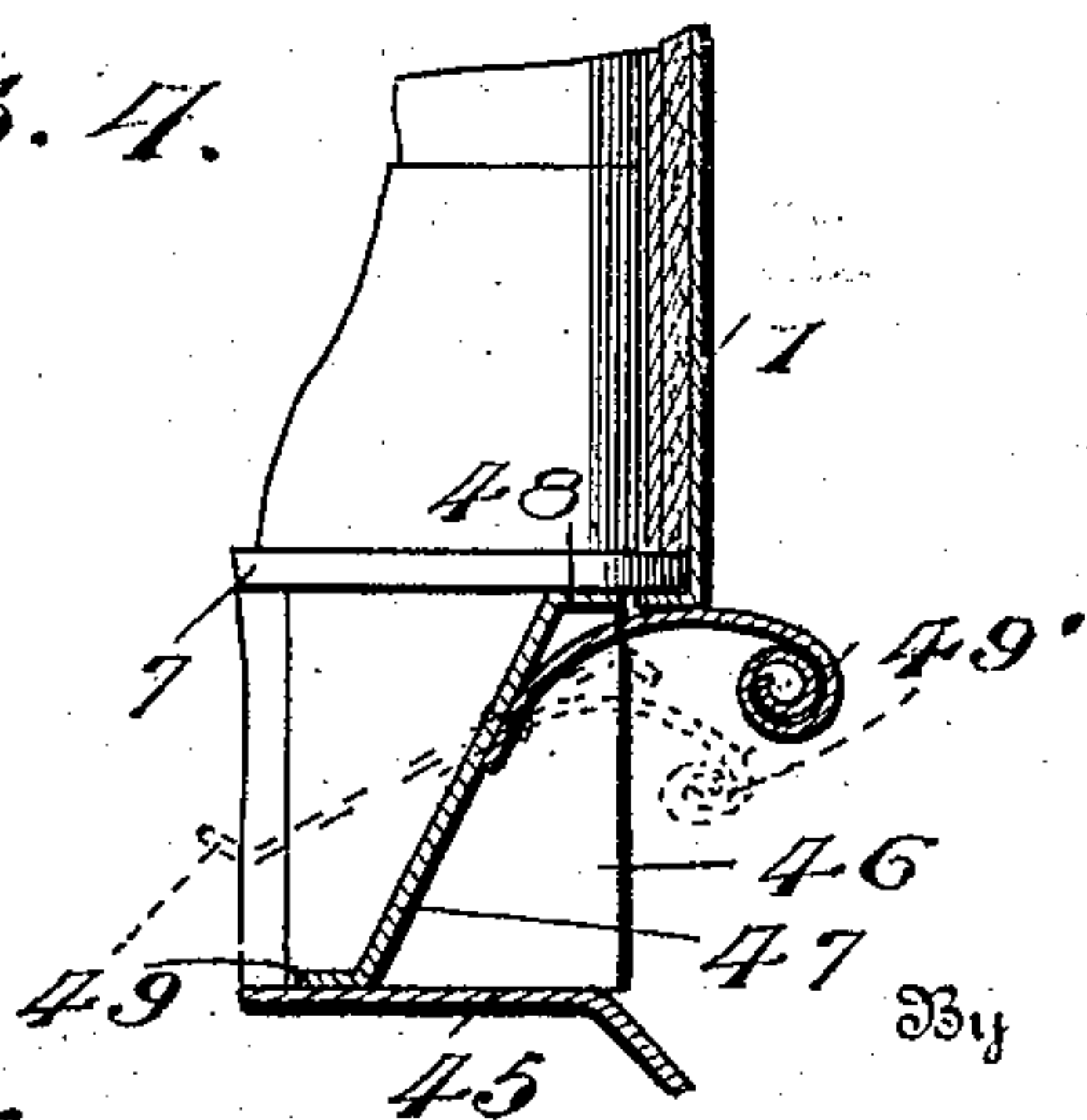


Fig. 4.



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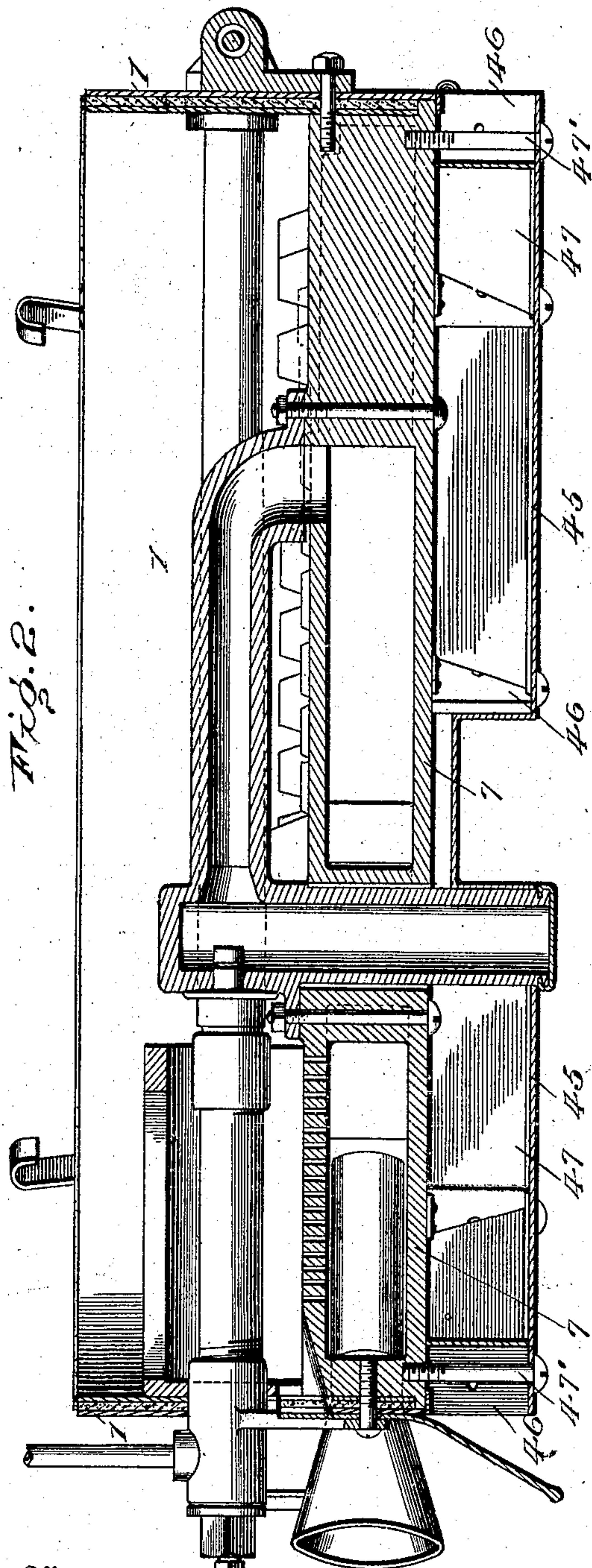
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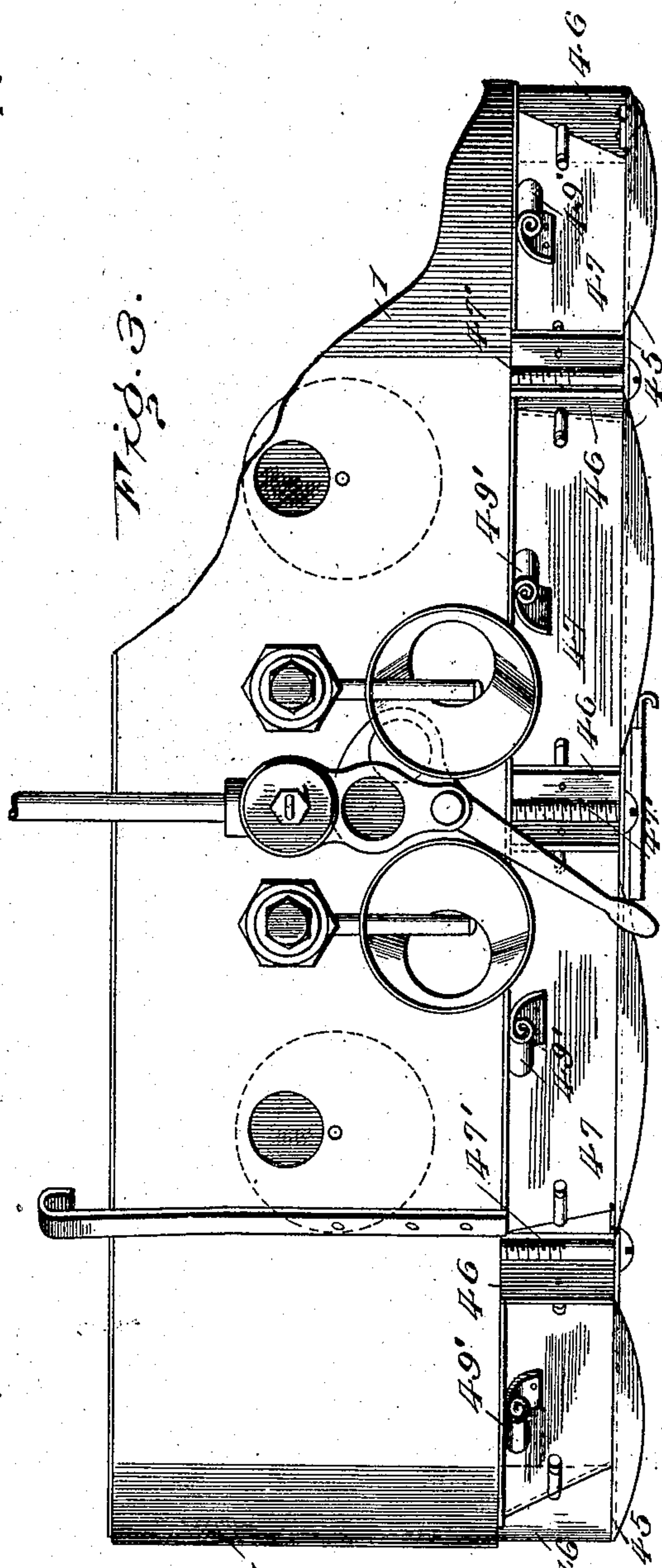
DRAFT REGULATOR FOR HYDROCARBON BURNERS.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FRED E. YOUNGS, OF SAN FRANCISCO, CALIFORNIA.

DRAFT-REGULATOR FOR HYDROCARBON-BURNERS.

No. 815,316.

Specification of Letters Patent.

Patented March 13, 1906.

Original application filed August 22, 1903, Serial No. 170,332. Divided and this application filed October 12, 1903. Serial No. 176,767.

To all whom it may concern:

Be it known that I, FRED E. YOUNGS, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Draft-Regulators for Hydrocarbon-Burners, of which the following is a specification.

My invention relates to improvements in draft-regulators for hydrocarbon-burners, and especially intended for use in steam-automobiles, and is a division of application Serial No. 170,332, filed August 22, 1903.

The object of my invention is to provide means for preventing a back draft through the burner, which causes the flame to be drawn down through the vertical air-tubes and out around the bottom of the burner, thus damaging the running-gear and body of the vehicle, as well as causing a loss of fuel and heat.

In the accompanying drawings, Figure 1 is a top plan view of a complete circular burner, showing my draft-regulator in dotted lines. Fig. 2 is a vertical sectional view of Fig. 1. Fig. 3 is an enlarged side view, partly broken away; and Fig. 4 is an enlarged vertical sectional view, partly broken away, showing one of my swinging doors.

Referring now to the drawings, 1 represents an ordinary circular casing, which is made of sheet metal and of the form most commonly used in steam-automobiles.

While I have shown my regulator attached to a circular burner, it will be understood that the same is applicable to any style of burner.

During the burning operation of all burners, and especially those used on motor-vehicles, the draft or wind blowing under the carriage causes a downdraft through the vertical flues, and thus causes the flame to be drawn down and flash out around the vehicle, thereby burning the running-gear and also causing the vapor to be only partly consumed, thus resulting in smoke and odor. To obviate this drawing of the flame and wasting of the fuel, I provide a draft-regulator which consists of a flat bottom 45, corresponding in shape and size to that of the bottom plate 7 of the burner, and secured thereto are the V-shaped spacing-plates 46, which have their upper ends resting against the lower surface of the plate 7. Passing between the two sides of the said V-shaped members are bolts 47, which screw into the

bottom of the plate 7, and thus the plate 45 is supported a distance below the plate 7, leaving the sides open between the spacing-plates 46 and the bottom plate 7. Pivoted between the side of one of said spacing-plates and the side of the plate adjacent thereto is a door 47, which has its upper end turned outwardly at 48 and its lower end turned inwardly at 49 and is so constructed that it will normally hang at an angle, as shown in Fig. 4. In order to counterbalance the weight of the door and hold the same just off of the balance-point, I provide a piece or strip of metal 49', which is rigidly secured to the door 47 by a bolt or rivet, and said strip is preferably made of some soft pliable metal and adapted to be rolled up, as shown in Fig. 4, thus lengthening or shortening the leverage and changing the balance-point of the door. It is understood that these doors are placed between the spacing-plates all the way around the bottom of the burner, or, in other words, the sides surrounding the bottom of the burner are practically formed of inwardly-swinging doors. This construction, as aforesaid, is to prevent the downdraft of the flame, and this is accomplished by the doors being made to swing inwardly only, and thus as the vehicle is moving along, whether backward or forward, the wind will engage the doors on the side toward the direction of the movement of the car and will swing the same inwardly and allow the air to pass therein; but the said air or draft will hold the door on the opposite side closed, and thus the air passes up through the air-tubes and causes a perfect combustion of the vapor. When the vehicle is standing still, the operation is the same, no matter from which direction the wind is blowing.

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

1. In combination with a hydrocarbon-burner, of swinging doors surrounding the lower end of said burner and adapted to be held closed by an outward draft from within the burner and adapted to be opened by pressure from the outside.

2. The combination with a hydrocarbon-burner, of means for admitting a rush of air to the burner from one or all of the sides and preventing a rush of air from within the burner.

3. The combination with a hydrocarbon-burner, of a casing below said burner, and

means carried by the casing for admitting a rush of air to the burner from one and all sides of said casing, and preventing a rush of air outward from within the casing.

5 4. The combination with a hydrocarbon-burner, of a casing surrounding the lower edge of said burner, doors surrounding the casing, and adapted to allow a rush of air to the burner from one and all sides of the casing, and preventing a rush of air outward
10 from within the casing.

5. The combination with a burner, of downwardly-extending members carried by the lower edge of said burner, a plate carried by
15 the lower end of said members, and inwardly-swinging doors pivoted between said members and closing the space between the burner and the plate.

6. The combination with a burner, of downwardly-extending members carried by said burner, a plate carried by the lower end of said members, doors pivoted between said members and closing the space between the burner and the plate, and means for preventing
25 the said doors from swinging outwardly.

7. The combination with a burner, of downwardly-extending members carried by said burner, a plate carried by the lower end of said members doors pivotally mounted between said members, and normally held in an oblique position, weights carried by the doors for counterbalancing the weight of the doors, said doors adapted to be swung inwardly only.
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8. The combination with a burner, of inwardly-swinging doors surrounding the lower portion of the burner, and means whereby the doors of one or all sides may be opened by the outside atmosphere, or one or all of the doors
40 may be closed by the inside pressure, or the doors on one side may be opened by outside atmosphere and closed by inside pressure, or vice versa.

9. The combination with a burner fitted
45 with vertically-arranged air-flues extending therethrough, of downwardly-extending members carried by the bottom of said burner, a bottom plate carried by said members, doors pivoted between said downwardly-
50 extending members, and means whereby the doors are opened by the air from the outside and closed by the air from the inside.

10. The combination with a burner, of ob-

liquely-arranged swinging doors normally held in an oblique and closed position, an
55 outwardly-extending flexible arm carried by said door, and adapted to be rolled and forming a weight for counterbalancing the door, and said door adapted to be swung inwardly and open by the outside pressure, and adapted
60 to be held closed by the inside pressure.

11. The combination with a burner, of downwardly-extending V-shaped members carried by the burner, a bottom plate supported by the lower end of said V-shaped
65 members, doors pivotally supported between said V-shaped members and normally held in an oblique closed position and adapted to be opened by the outside pressure and closed by inside pressure.
70

12. The combination with a burner, downwardly-extending V-shaped members carried by the burner, a bottom plate supported by the lower end of said V-shaped members, of obliquely-arranged doors pivoted between
75 said V-shaped members and normally held in an oblique and closed position, an outwardly-extending flexible arm carried by each door and adapted to be rolled and forming a weight for counterbalancing the door,
80 and said door adapted to be swung inwardly and opened by the outside pressure and adapted to be held closed by the inside pressure.

13. The combination with a burner, of normally inwardly inclined swinging doors surrounding the lower portion of said burner, and adapted to be opened inwardly by air-pressure from the outside or held closed by air-pressure from the inside
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14. The combination with a burner, of obliquely-arranged swinging doors normally held in an oblique and closed position, outwardly-extending adjustable arms carried by said doors, and said doors adapted to be
95 swung inward and opened by the outside pressure and adapted to be held closed by the inside pressure.

In testimony whereof I have hereunto set my hand in the presence of two subscribing
100 witnesses.

FRED E. YOUNGS.

Witnesses:

W. H. KENNEDY,
J. A. GRAVES.