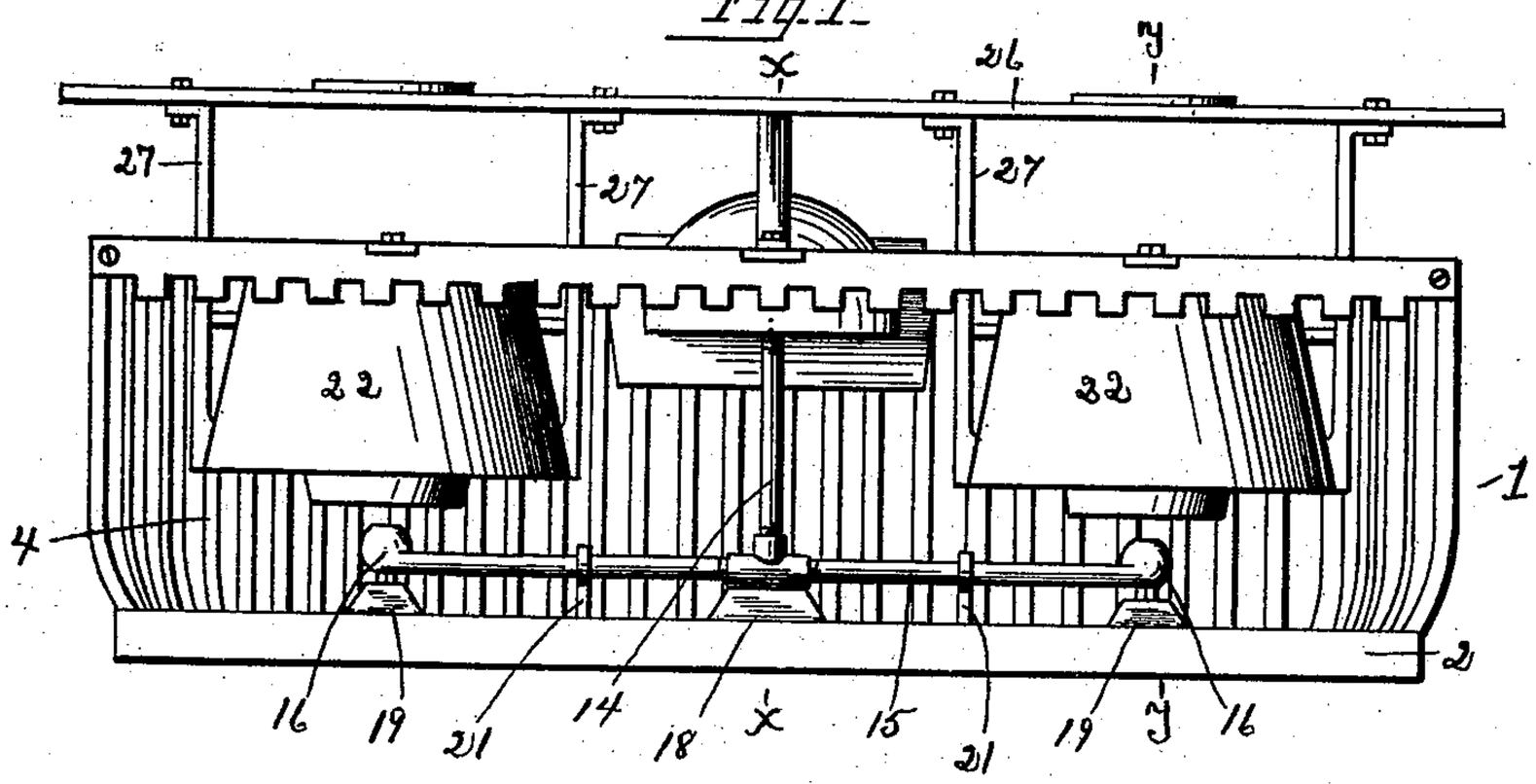
(No Model.) 2 Sheets—Sheet 1.

C. DEVOE.

HYDROCARBON GAS GENERATOR AND BURNER.

No. 506,772. Patented Oct. 17, 1893.

Fig. 1



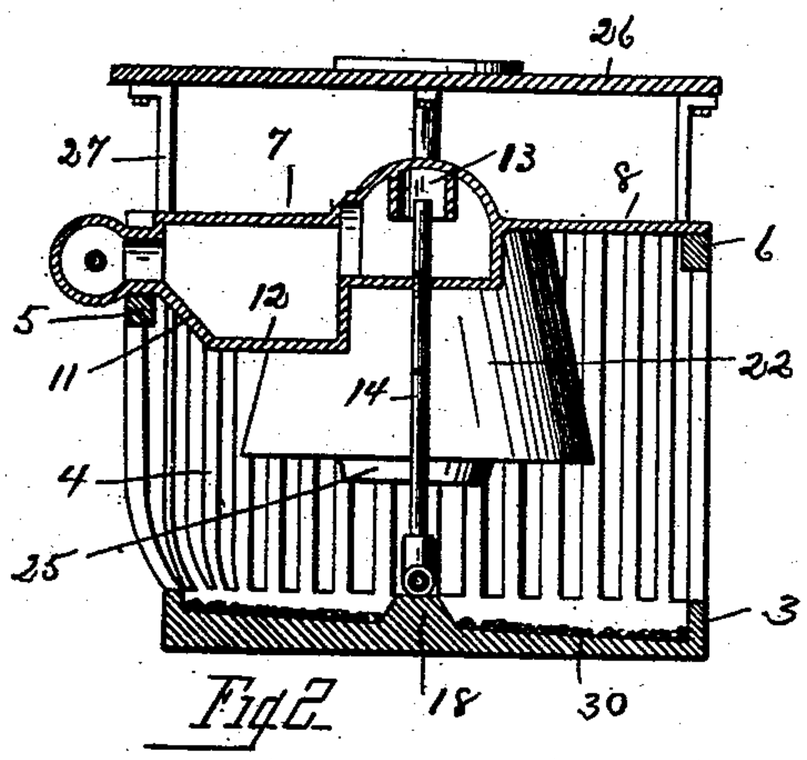


Fig 2

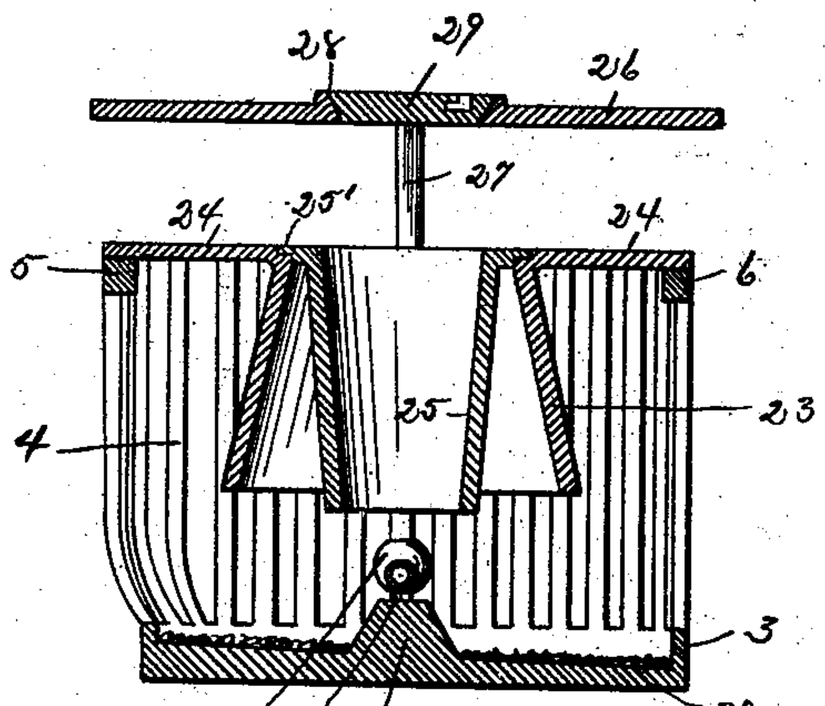


Fig 3

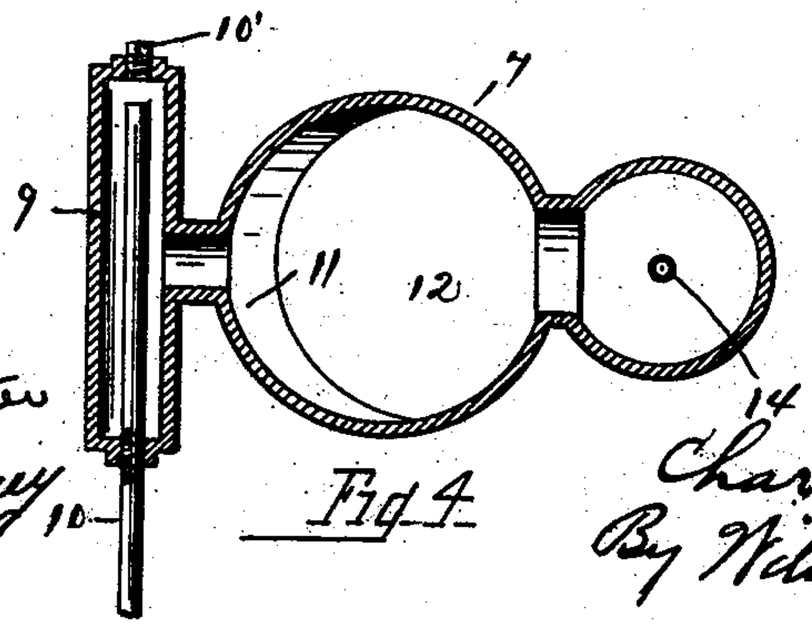


Fig 4

WITNESSES

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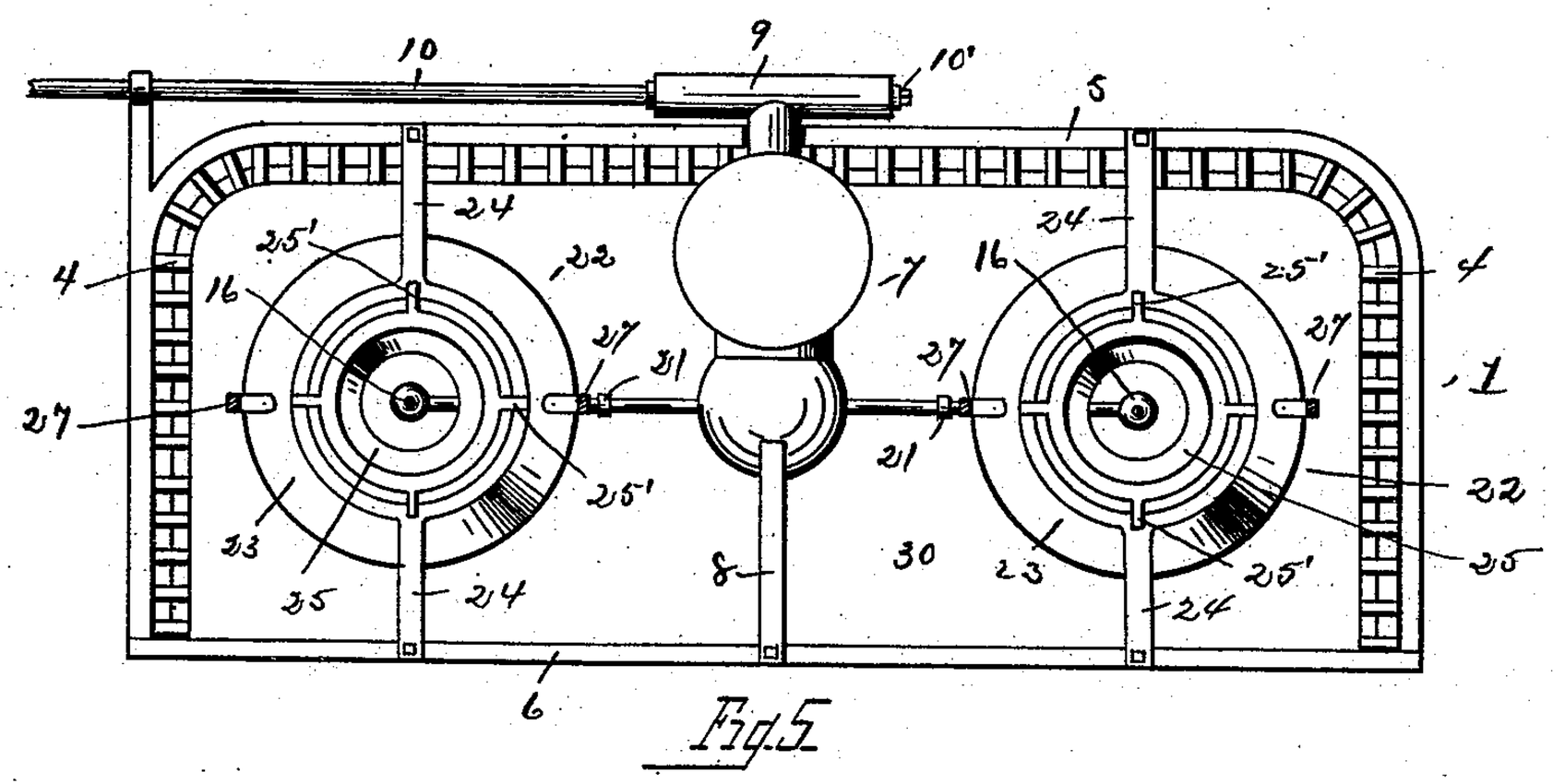

Fig. 5

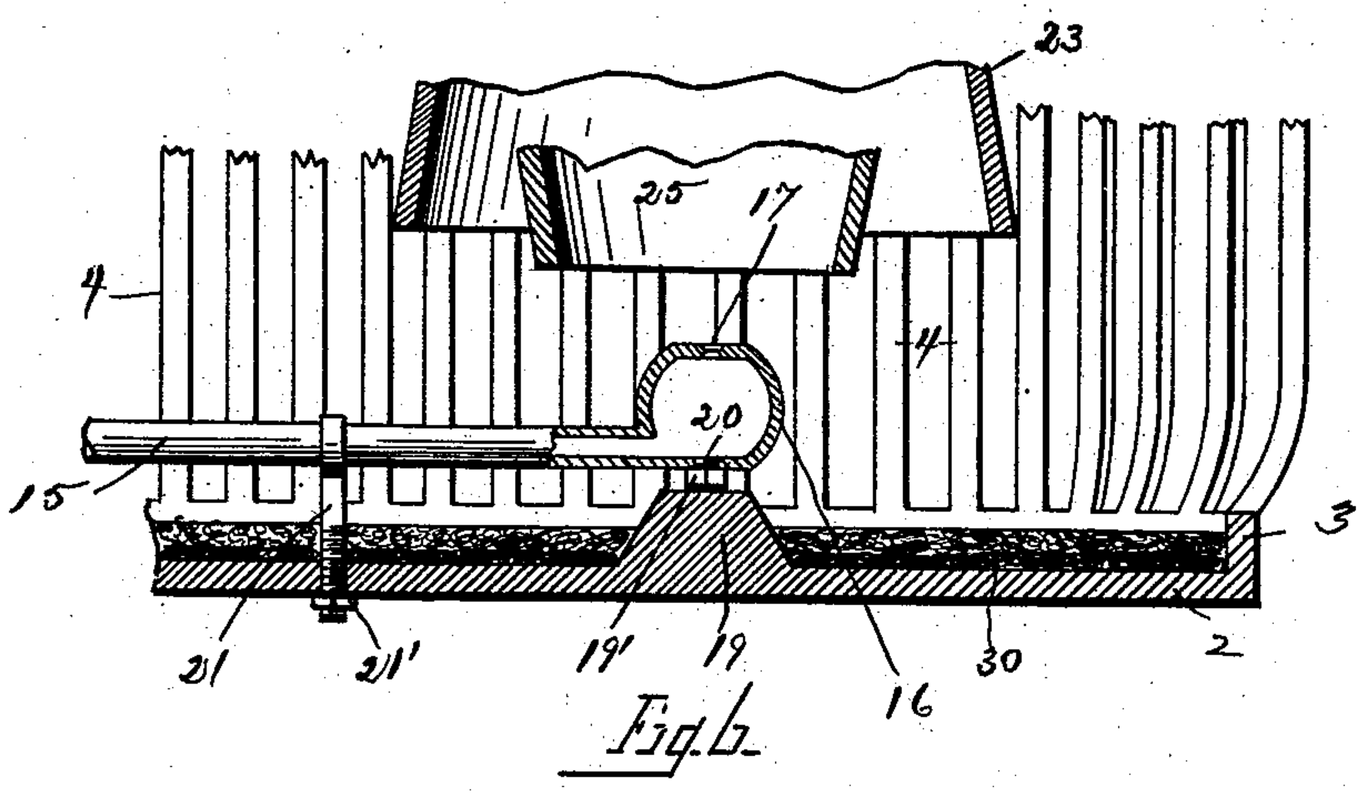

Fig. 6

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UNITED STATES PATENT OFFICE.

CHARLES DEVOE, OF LIMA, OHIO.

HYDROCARBON-GAS GENERATOR AND BURNER.

SPECIFICATION forming part of Letters Patent No. 506,772, dated October 17, 1893.

Application filed August 31, 1892. Serial No. 444,609. (No model.)

To all whom it may concern:

Be it known that I, CHARLES DEVOE, of Lima, county of Allen, and State of Ohio, have invented certain new and useful Improvements in Hydrocarbon-Gas Generators and Burners; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

The invention is an improved hydro-carbon burner, and is constructed with a view of supplying the burner with a sufficient quantity of air without creating the disagreeable roaring noise so common in hydro-carbon burners. This burner is also constructed with a view of securing a complete vaporization of the oil, and also of mixing a definite quantity of air with said vapor at the point of combustion.

With these objects in view, my invention consists in the peculiar construction of some of the parts, and also in the novel manner in which all the parts are combined, as will be more fully hereinafter described and claimed.

In the drawings: Figure 1 is a front view of a complete burner. Fig. 2 is a transverse section on lines X—X, Fig. 1. Fig. 3 is a transverse section on line Y—Y, Fig. 1. Fig. 4 is a horizontal section of the combined oil and vapor chamber. Fig. 5 is a top plan view of the burner with the deflecting plate removed. Fig. 6 is a detail sectional view.

In carrying out my invention I employ a frame 1, composed of a base 2, having a sloping face, and a surrounding flange 3. Extending upwardly from this flange on three sides of the base are the sides 4 composed of a series of vertical bars, and all connected by means of a top rail 5. The opposite ends of this top rail 5 are also connnected by means of a front rail or cross bar 6, said bar forming with the top rail 5, an open rectangular frame upon which are supported the oil, vaporizing, and mixing chambers.

7 designates a combination chamber, provided with an integral arm 8, which rests upon the bar or rail 6, while the rear end of the chamber is supported upon the top rail 5, as shown in Figs. 2 and 5. This combination chamber comprises an oil compartment 9, a vaporizing compartment 12, and a vapor collecting compartment 13. An oil supply pipe 10 enters one end of the oil compartment, and extends nearly to the opposite end, which is closed by a screw plug 10′. The bottom of the vaporizing portion is below the oil compartment, and is formed with an inclined portion 11 down which the oil flows in a thin sheet, and is readily vaporized. The vapor then ascends to the dome shaped collector 13, into which is led a delivery pipe 15, said pipe 15 having hollow globular burners 16, at each end, and these burners are each provided with the top and bottom apertures 17 and 20 respectively, the upper apertures being beveled at their inner and outer edges, whereby the vapor may issue therefrom with great force, and then expand rapidly, whereby a more perfect combustion is attained. The burner pipe rests upon the central bars 18 and the end bosses 19, and in the aperture 20 is screwed a plug 19′, which bears upon these end lugs as clearly shown in Fig. 6. These are for the purpose of preventing the pipe warping, and to make it more secure, I employ the eye bolts 21 and nuts 21′, screwed thereon beneath the base.

23 designates a mixer composed of an outer shell 23, and an inner shell 25, the outer shell having integral arms 24 to support it upon the rails 5 and 6, and the shell 25 is provided with lugs 25′ to support it within the shell 24. The outer shell 23 is broader at the bottom, and the inner shell 25 is contracted at the bottom, so that the space between the two shells is annular, and tapers toward the top. The top of the inner shell is of such a size that a concentric opening is produced through which air is drawn up between the shells, and inasmuch as the space between the shells tapers, it will issue with great force. The contracted end of the inner shell rests directly above the burner, so that the vapor passes straight up. Said shell is given ample room to expand prior to the mixture with the air, which entirely surrounds it, thereby making a complete admixture, and greatly aiding combustion.

26 indicates a deflecting plate supported above the burner upon the standards 27, ex-

tending upward from the sides of the oute shells 23, and this deflector is formed with openings 28, which register with the stove holes, and if desired, these openings can be closed by covers 29.

30 indicates the asbestus wicking, which is used to start an initial fire, and when this initial fire is built, the oil in the chamber 12 is vaporized and elevated to the dome 13. From here it is drawn off by the pipe 14 and it will be seen that there is no chance of any solid particles being drawn into the pipe 14, and in this way all coking or charring of the hydro-carbon within the pipe is avoided. The burners being constructed and arranged as they are, also prevent any condensation, and as the vapor emerges from the burner, it rapidly expands into the inner shell, and emerging therefrom, is mixed with air and completely consumed. The covers 29 are removed when it is desired that the flames shall reach a pot, &c., in the stove hole.

Having thus described my invention, what I claim is—

1. In a hydro-carbon burner, an oil supply pipe, a chamber connected with said pipe, said chamber having a lower portion provided with an inclined bottom, and a dome shaped upper portion, a delivery pipe leading into the dome shaped portion, and a burner pipe connected with the delivery pipe.

2. In a hydro-carbon burner, a frame comprising a base, side and top rails, a vaporizing, chamber supported upon said frame about midway its length, the burner and pipes connecting the same with the vaporizing chamber, and the mixers supported also from the frame above each burner, whereby the vapor is mixed with a large percentage of air as it is burned.

3. In a hydro-carbon burner, a frame, an outer shell supported upon the same, by means of radiating arms integral with the shell an inner shell supported upon the outer one, the upright standards upon the outer shell and the deflecting plate supported by said standards.

In testimony that I claim the foregoing as my own I hereby affix my signature in presence of two witnesses.

CHARLES DEVOE.

Witnesses:
EMERSON W. PRICE,
C. B. PRICE.