

(No Model.)

E. A. EDWARDS.
OIL BURNER.

No. 314,922.

Patented Mar. 31, 1885.

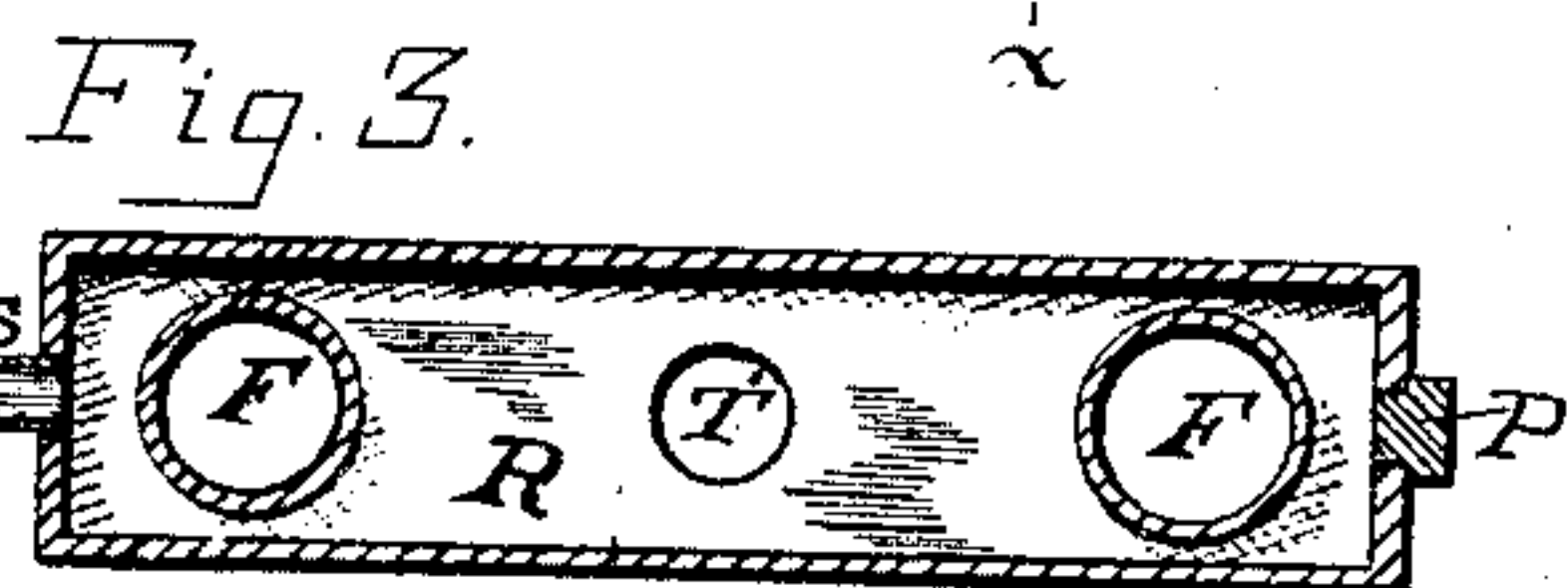
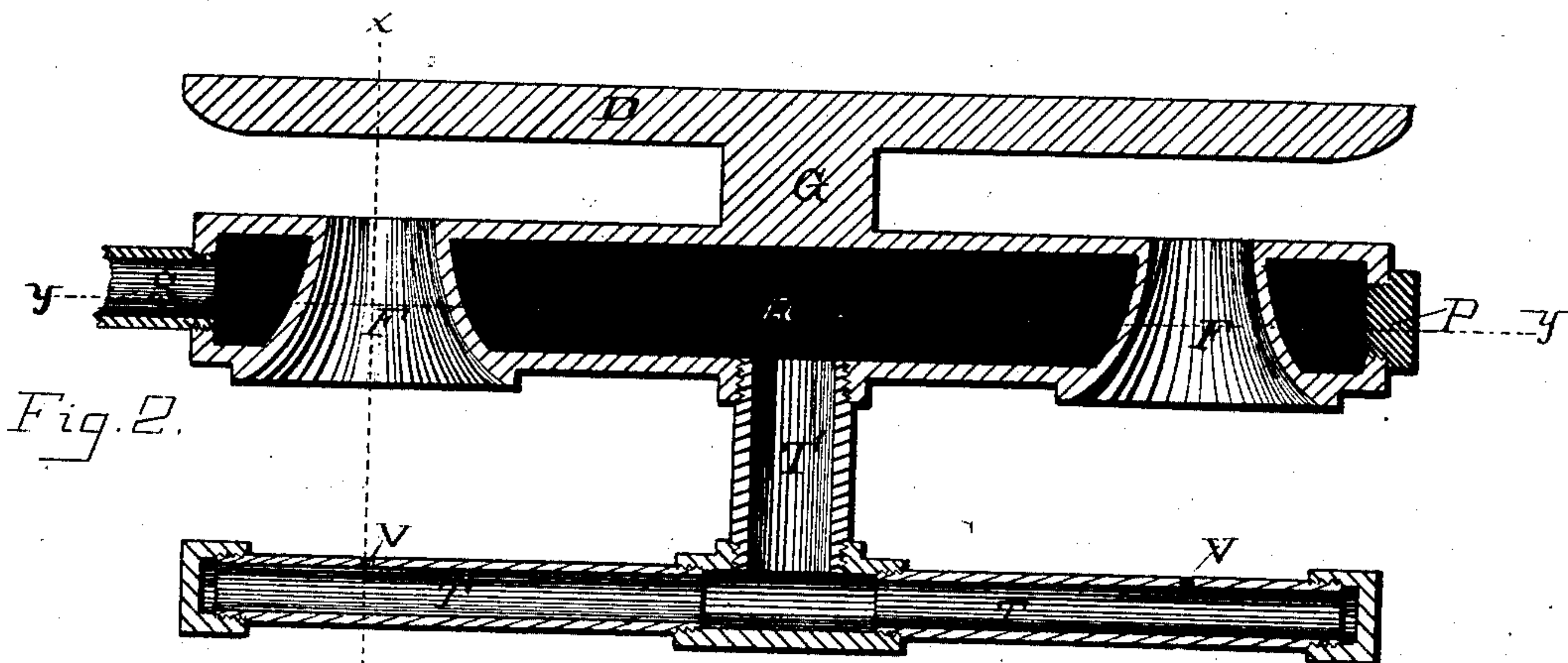
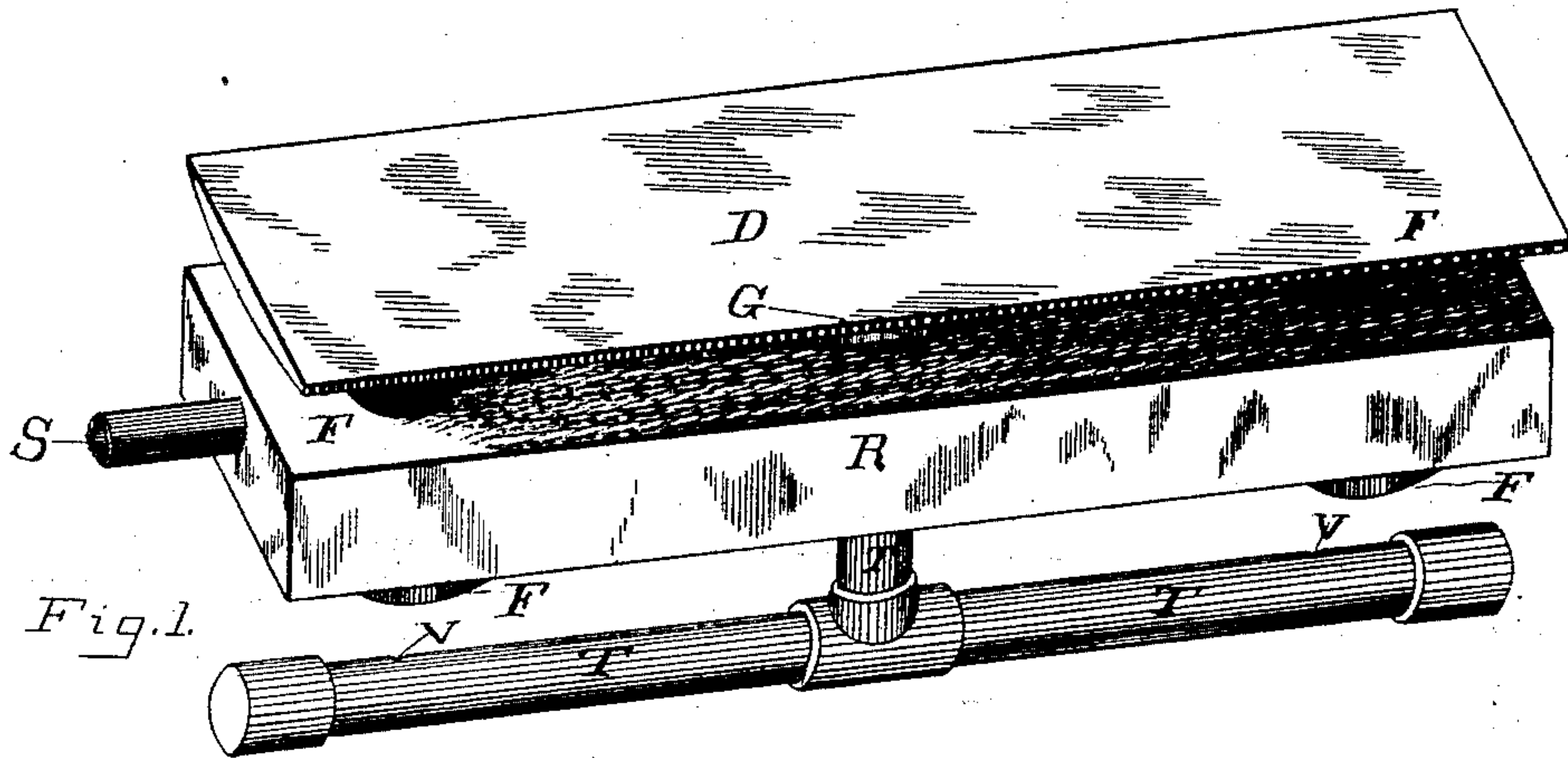
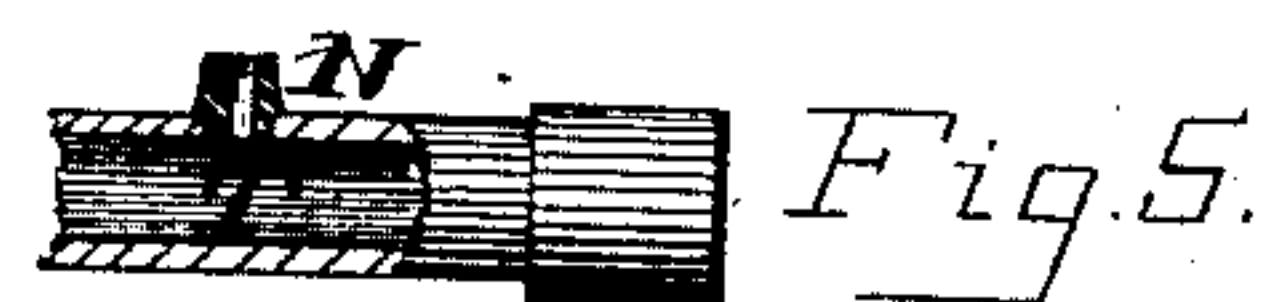
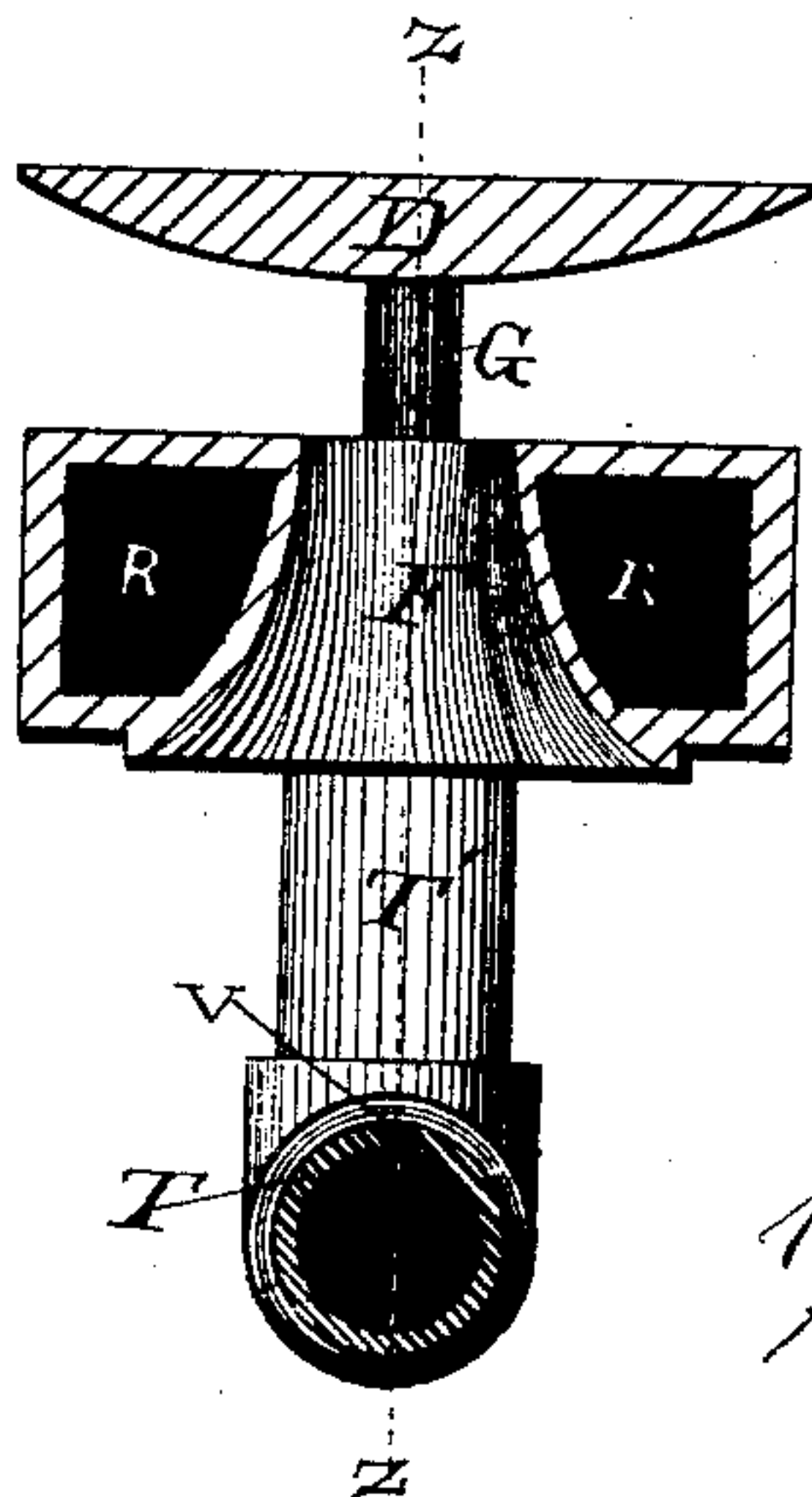


Fig. 4.



Witnesses.

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per.
Hazard & Townsend
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UNITED STATES PATENT OFFICE.

EVAN A. EDWARDS, OF LOS ANGELES, CALIFORNIA.

OIL-BURNER.

SPECIFICATION forming part of Letters Patent No. 314,922, dated March 31, 1885.

Application filed October 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, EVAN A. EDWARDS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Improvement in Oil-Burners, of which the following is a specification.

My invention relates to that class of oil-burners which produce and burn oil-gas, and are adapted to use the heavier grades of oil.

In making oil-gas, the prolonged contact, under pressure, of the oil-vapor with a red-hot surface, is requisite for the production of the gas in such a condition as to secure the best results.

The object of my invention is to so construct the burner as to vaporize the oil, and then bring the vapor into contact, under pressure, with a red-hot portion of the retort, whereby it is decomposed and converted into gas. A further object is to produce a large body of flame, and to adapt the burner for use in ordinary stoves and furnaces; also, to provide convenient means for lighting the same. I attain these objects by means of the device described herein, and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my improved burner. Fig. 2 is a vertical longitudinal section of the same, on line Z Z, Fig. 4. Fig. 3 is a horizontal section on line Y Y, Fig. 2, on a reduced scale. Fig. 4 is a vertical cross-section on line X X, Fig. 2. Fig. 5 is a section of the vent-tube, showing a nipple, N, inserted in the vent.

The oil flows into the retort R through the feed-pipe S, over the floor of the retort, down the pipe T' into the horizontal vent-tube T, which it fills until it overflows at the vents V V in the top of the tube. It is there ignited, and the flames ascend in a broad sheet against the bottom of the retort and heat the oil and vaporize it. The expanding vapor forces itself out at the vents V V and ignites. The pressure caused by the expanding vapor drives the flame upward through the funnel-shaped flues F, against the deflector D. The vents are placed at a distance below the mouths of the flues, so that the flame arising from the burning oil is allowed to spread over the bottom of the retort and heat it until sufficient pressure is produced in the retort by the ex-

panding vapor to force the jets upward through the flues, and this distance between the flues and vents allows the flames of the jets to spread before entering the flues, so that they strike against the converging sides of the flues, thus heating them rapidly to a red heat. The vapor of the oil as it comes into contact with the red-hot flues is decomposed and converted into gas, which passes out at the vents. The flames, after passing through the flues, strike against the bottom of the deflector D, which is inclined upward from its middle line to its sides, as shown in Fig. 4. The flame is thereby divided and caused to ascend upon each side of the deflector, thus being equally distributed. It is desirable that there should be only a small body of oil retained at any time upon the bottom of the retort, so that when the oil is ignited and the flame strikes against the bottom of the retort the oil therein will be readily vaporized. It is also desirable that the oil should not be subjected to the excessive heat resulting from the direct contact of the blast of the flame with the bottom of the retort, so that the oil will not be decomposed in such a manner as to leave a deposit in the retort. It is also necessary that the vapor formed from the oil be brought into contact with a red-hot surface, in order to decompose it and form a gas which will consume to the best advantage. The mouth of the pipe T', which connects the retort with the vent-tube T, is even with the floor of the retort, so that only a thin sheet of oil is in the retort when the oil has filled the vent-tube and begun to flow out at the vents V. As the oil, when ignited, after flowing from the vents will throw up a broad sheet of flame against the bottom of the retort, the oil in the retort is quickly vaporized; but when the vapor has expanded sufficiently the jets of flame are forced up through the flues in the retort, so that the flame no longer strikes against the bottom of the retort, and the oil is therefore relieved from the direct heat thereof. At the same time the jets of flame strike against the sides of their respective flues and heat them to a red heat, thus decomposing the vapor and forming gas. The heat in the retort is sufficient to vaporize the oil as it flows along the floor of the retort; but the heat is not sufficient to cause a deposit of carbon, as is the

case when the flame is directed against the bottom of the retort.

I am aware that burners have heretofore been constructed in which the flame passes through a plain cylindrical flue in the generating-retort, and in which a pipe having its mouth considerably above the floor of the retort conducts the vapor from the retort to the vent, thus causing a large body of oil to accumulate in the retort before any portion can flow to the vent, and remain in the retort while the apparatus is in use.

I am also aware that an annular retort having its inner wall made tapering or conical in form, and having a feed-pipe entering it at the bottom, and having the pipe for the exit of the vapor connected with the retort at or near the top thereof, has been combined with a burner having its jets within the lower end or mouth of the retort and at or above its lower line, so that the flame from the jets ascend along the inner inclined sides of the retort.

I am also aware that other devices have been used in which retorts having no flues therein have been placed directly above jets which are connected with the retort by a pipe having its mouth on a level with the floor of the retort, and having flues situated below the retort.

I do not claim these features as new.

Having thus described my invention, what I claim, is—

1. The combination of the gas-generating retort, the tube T', opening therein at a level with the floor of the retort, and connecting the same with the vent-tube, the vent-tube T, situated under the retort, and having vents upon its upper side, inverted funnel-shaped flues situated above such vents and passing through the retort, and the deflector situated above the retort, all being constructed and combined substantially as and for the purpose set forth.

2. The combination, in an oil-burner, substantially as described, of a gas-generating retort, constructed, as shown, with inverted funnel-shaped flues passing upward there-through, a gas-pipe the mouth of which is on a level with the floor of the retort, and gas-vents connected with the retort by such pipe, and situated beneath the mouth of the flues, substantially as set forth, whereby the flame is caused to heat the upper portion of the retort in excess of the bottom of the retort, where the oil is vaporized, so that the oil is subjected to a moderate heat and the vapor is subjected to excessive heat.

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Witnesses:

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