

No. 653,189.

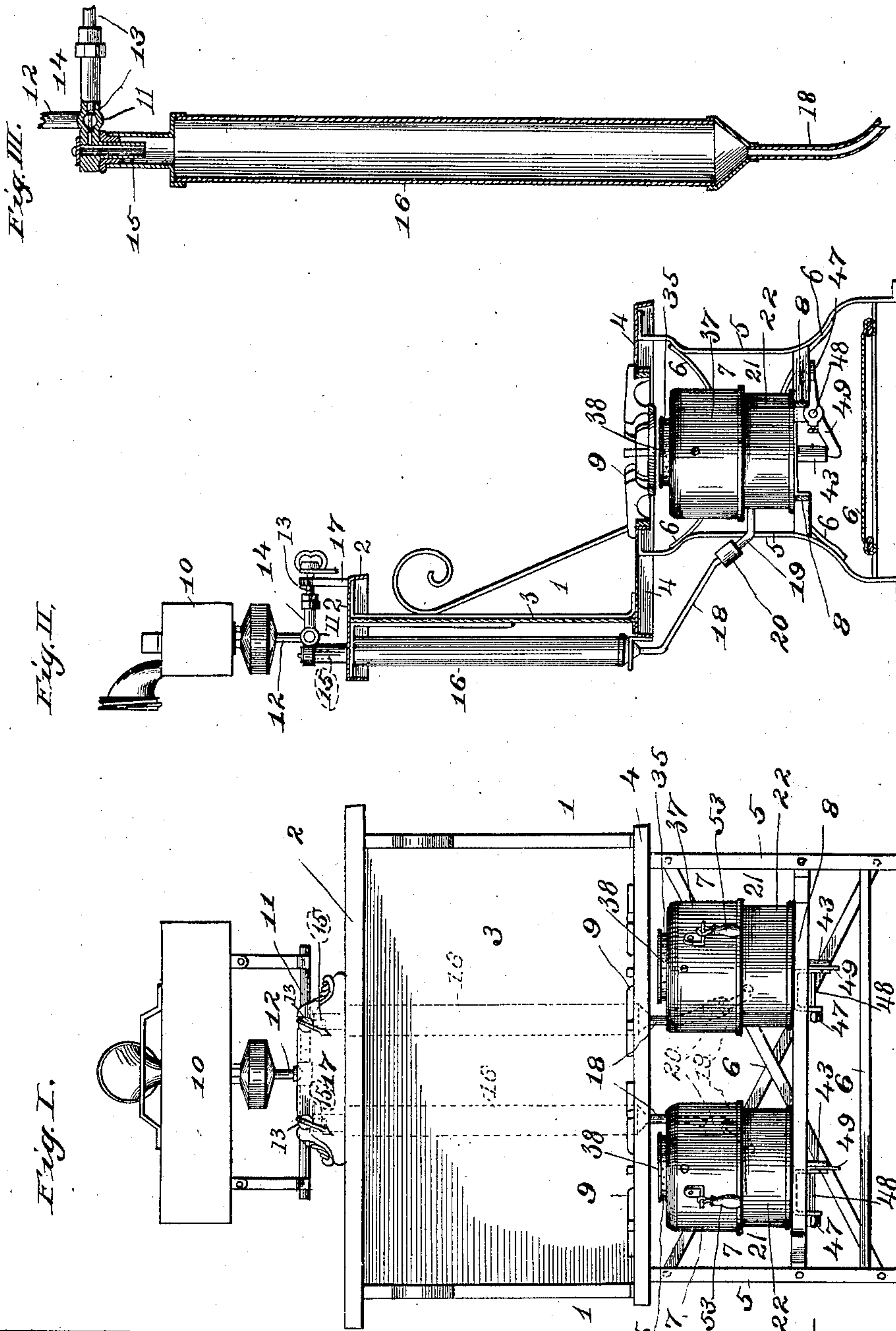
Patented July 3, 1900.

L. STOCKSTROM.
VAPOR STOVE.

(Application filed Dec. 23, 1898.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses—

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INVENTOR—

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No. 653,189.

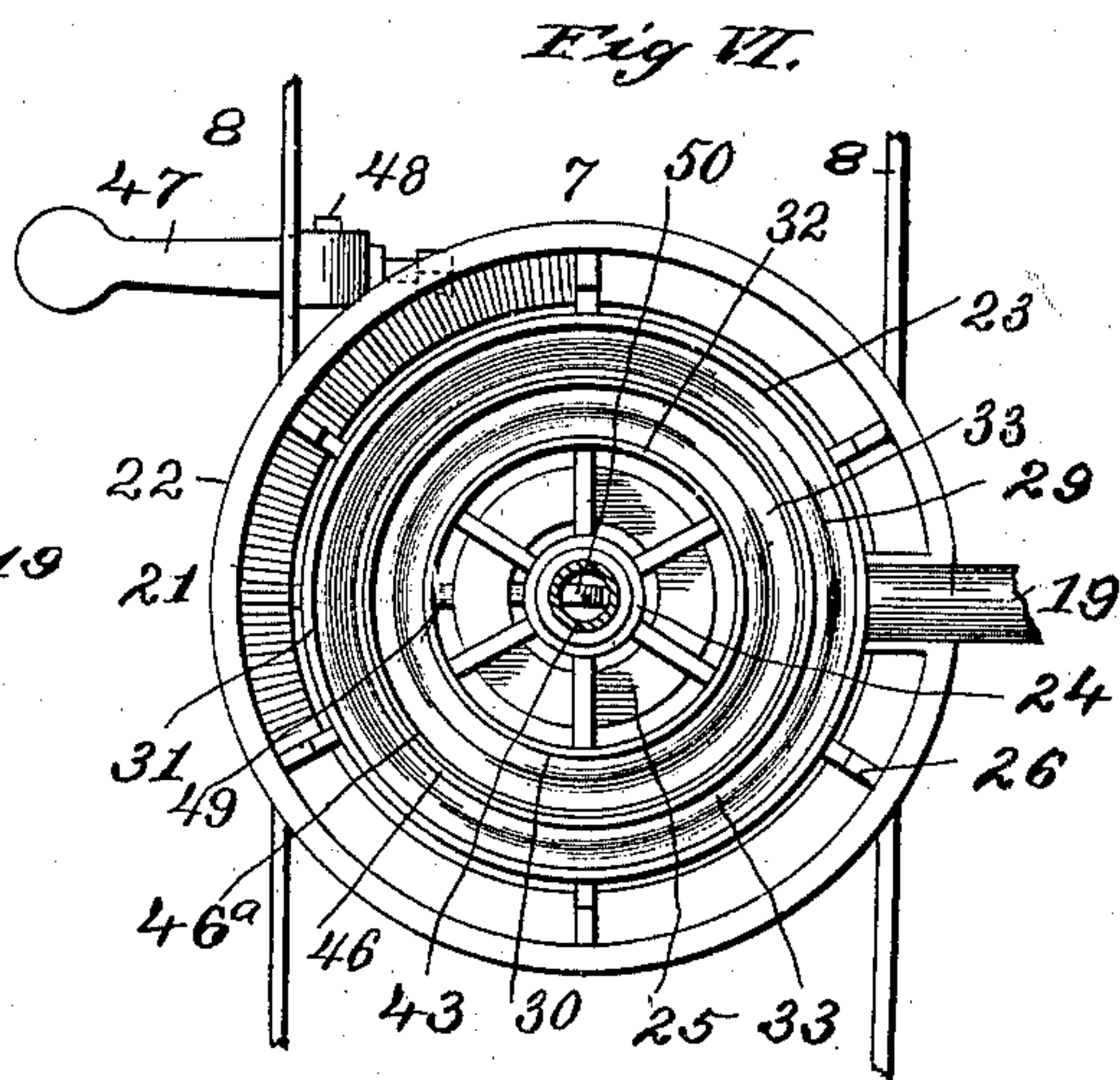
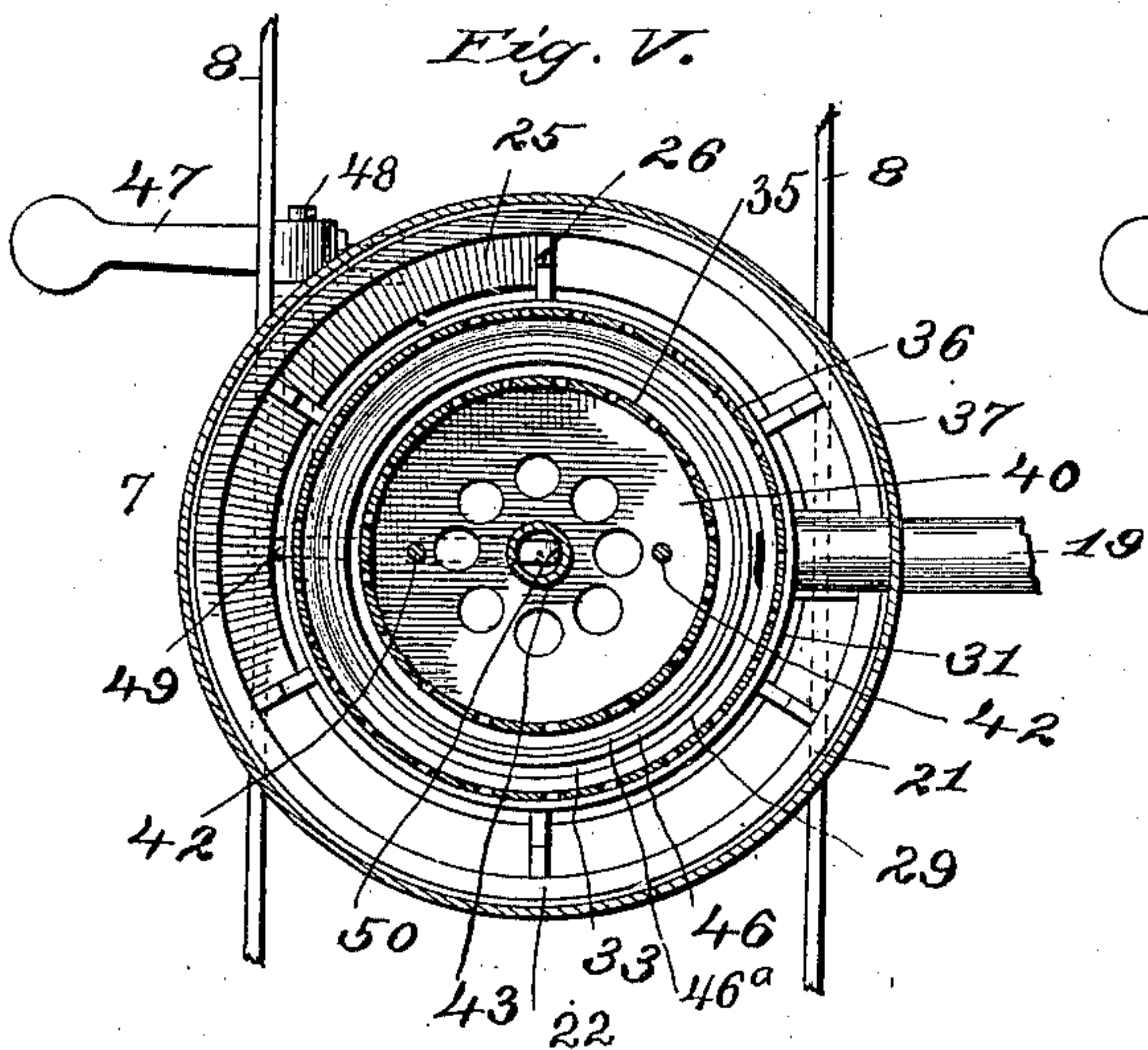
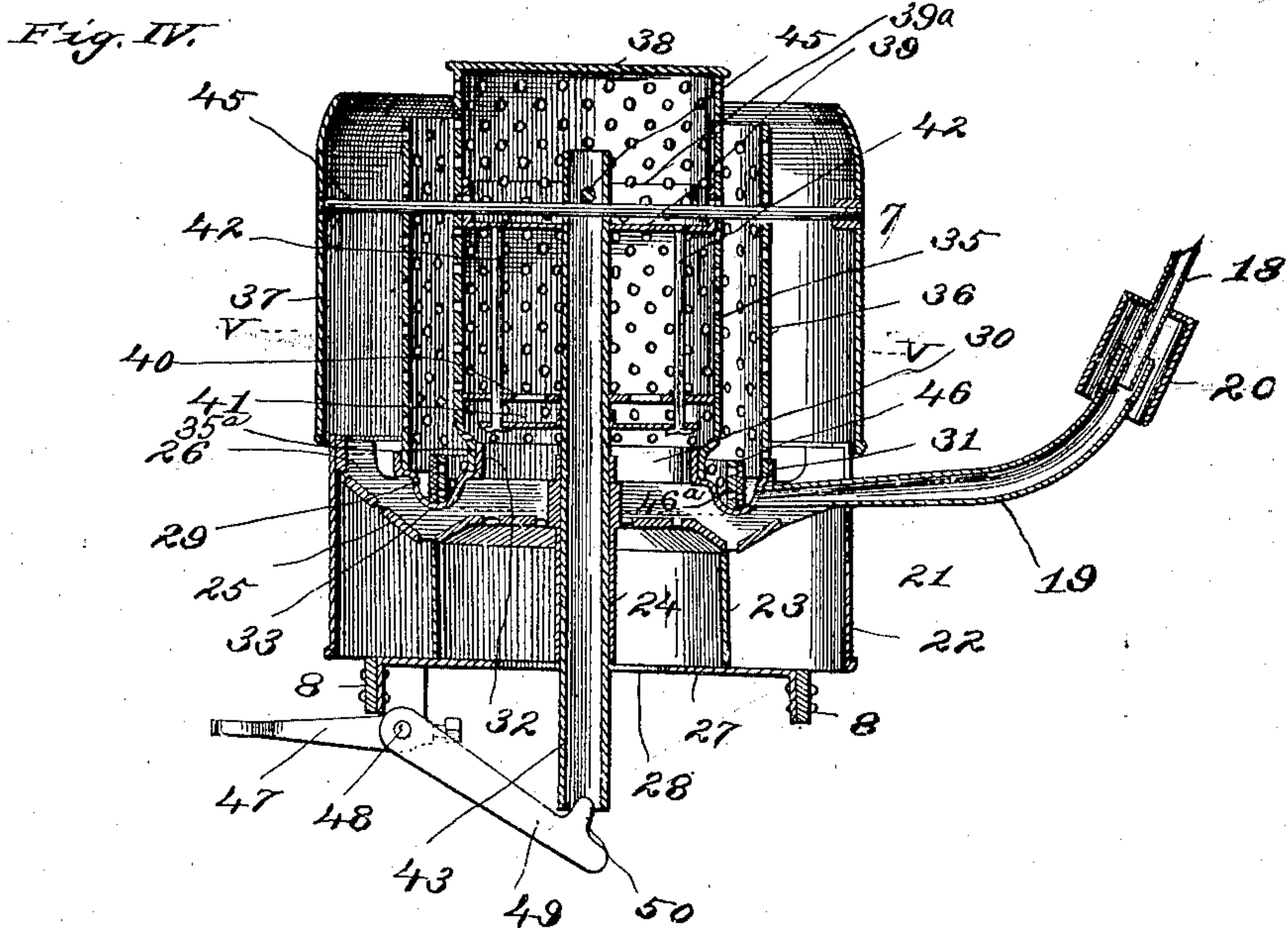
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2 Sheets—Sheet 2.



Witnesses—

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UNITED STATES PATENT OFFICE.

LOUIS STOCKSTROM, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
CHARLES A. STOCKSTROM, OF SAME PLACE.

VAPOR-STOVE.

SPECIFICATION forming part of Letters Patent No. 653,189, dated July 3, 1900.

Application filed December 23, 1898. Serial No. 700,149. (No model.)

To all whom it may concern:

Be it known that I, LOUIS STOCKSTROM, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have
5 invented a certain new and useful Improvement in Vapor-Stoves, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

10 This invention relates to certain improvements in vapor-stoves using coal-oil as a fuel.

The invention consists in features of novelty hereinafter fully described and pointed out and claimed.

15 Figure I is a front elevation of my improved stove. Fig. II is an end view with the frame of the stove in section. Fig. III is an enlarged vertical section of one of the feed-tubes. Fig. IV is a vertical section of one of
20 the burners. Fig. V is a horizontal section taken on the line V V, Fig. IV, looking downward. Fig. VI is a top view of the base of one of the burners with the vaporizing-cup in position.

25 1 represents the frame of the stove, consisting of a top shelf 2; a back piece 3, a table 4, and supporting-legs 5, strengthened by braces 6.

7 represents the burners, of which there may
30 be one or more, resting upon a support 8, connected to the legs 5. Directly over the burners the table 4 is provided with open spiders 9 to receive the vessel or other object being heated. 10 represents the oil-tank supported
35 over this shelf 2 on a horizontal pipe 11, to which it is connected by a vertical pipe 12. The horizontal pipe 11 is provided with needle-valves 13, located in short transverse horizontal pipes 14, having pendent nipples 15,
40 that enter the upper ends of the vertical feed-tubes 16, as shown in Fig. III. The needle-valves 13 rest in notches in the bracket 17, mounted on the shelf 2, and the nipples 15 fit detachably in the tubes 16, so that the tank
45 can be lifted off, with the needle-valves, to be filled. The tubes 16 extend down behind the back piece 3, are made quite large, and extend down as far as the table of the stove, so that as the oil drops from the nipples 15 it
50 falls by gravity without coming in contact with the tubes or with the burner-pipe until

it reaches points adjacent to the burners, where it has to move in a lateral direction toward the burners. The tubes act as protection-shields to the falling drops passing from
55 the nipples to the burner-pipes. By thus permitting the oil to descend by gravity without coming in contact with the tubes during its vertical movement, which comprises the greater amount of its movement from the
60 tank to the burner, the feed of the oil is rapid, as it does not come in contact with the inner faces of the tubes while passing to the burner-pipe, and the tank with its needle-valves is located a considerable distance from the
65 burners. In this way neither the needle-valves nor the oil are affected by the heat of the burners, and the flow of oil through the needle-valves remains practically regular after being adjusted by the operator. From
70 the lower ends of the tubes 16 lateral supply-pipes 18 extend to near the burner. These pipes 18 are not made large, for the reason that the oil could not pass through them by gravity without touching them, as they are
75 not in a vertical position. The lower ends of the pipes 18 enter short supply-pipes 19, connected to the vaporizing-cups 29 of the burners, as hereinafter shown, so that the oil passes from the pipes 18 into the pipes 19, and at
80 the point of connection between the pipes the pipes 18 may be provided with hoods 20 to guard the joints between the pipes.

The construction of the burners is illustrated in detail in Figs. IV, V, and VI. 21
85 represents the base of the burner, which consists of an outer cylinder 22, an inner cylinder 23, a central tube 24, a slotted diaphragm 25, and radial bars 26, located above the slotted diaphragm. The cylinders 22 and
90 23 are open at the bottom to permit air to pass up through the slotted diaphragm, and to prevent too much air passing up through the inner cylinder there is located a disk or plate 27 beneath the cylinder, which has a central
95 opening 28, that permits a requisite amount of air to pass through. 29 represents an annular-cup that rests on the bars 26 and which forms a vaporizing chamber or channel. This cup is open in the center, as shown at 30, and
100 it has an outer flange 31, an inner flange 32, and a depression 33 in its bottom. The cup

has connected to it the portion of the supply-pipe 19 with which the pipe 18 connects, as already stated. Resting on the cup 29 against the flange 32 is the reduced portion 33^a of an inner perforated cylinder 35, and resting on the cup against the flange 31 is an outer perforated cylinder 36, these cylinders 35 and 36 being surrounded by an imperforate cylinder 37, that is open at top and bottom and the lower end of which fits over the upper end of the outer cylinder 22 of the base 21. The cylinder 36 is open at top, while the cylinder 35 has a closed top 38. Within the cylinder 35 is an upper imperforate diaphragm 39, having an annular perforated flange 39^a and a lower perforated diaphragm 40. Beneath the diaphragm 40 is a disk 41 of less diameter than the inside of the cylinder 35 and which is suspended from the diaphragm 39 by rods 42. 43 represents a central air-tube open at both ends and which extends up through the tube 24 and into the cylinder 35 to a point above the diaphragm 39. The cylinders 35, 36, and 37 and the tube 43 are fastened together by bolts 45, as shown in Fig. IV. Within the cups 29 is a ring 46, of absorbent non-combustible material, such as asbestos, surrounding a perforated ring 46^a. This asbestos ring is for use in initially heating the burner. Beneath each burner there is a lever 47, secured to a rock-shaft 48, having an arm 49 with a projection 50 that extends into the open end of the tube 43. The tube 43 fits loosely in the tube 24, and by pressing on the outer end of the lever 47 the tube 43, carrying the cylinders 35, 36, and 37 with it, is raised, so as to lift the cylinders vertically away from the vaporizing-chamber, so that a match can be applied to start the burner. When the lever is released, the tube 43 guides the cylinders back to their normal position.

The operation of the burner is as follows: A small amount of oil is allowed to pass into the vaporizing-cup by opening the needle-valves 13 of the burner to be started, and a match is applied to the ring 46, which has absorbed the oil that was admitted to the cup. The oil burns on the ring as on the wick of an ordinary lamp and heats the vaporizing-cup, and after the cup has become heated the oil is turned on more, the needle-valves being opened sufficiently to allow the oil to drop faster from the nipple 15. As the oil comes in contact with the hot cup 29 it vaporizes, and the vapor being heavier than the atmosphere flows by gravity around the cup, and as it becomes mixed with oxygen it rises into the space between the cylinders 35 and 36, where combustion takes place, and there is maintained a blue flame at the top of the burner.

By providing the diaphragm 39 the air entering the cylinder 35 through the perforated diaphragm 40 is compelled to pass out of the cylinder 35 before it reaches the top of the cylinder, thus aiding in the mixing of the va-

por and air in the lower part of the burner, while by providing the tube 43 air is furnished to the upper part of the cylinder 35 to escape therefrom through the perforations above the diaphragm 39 and mix with the vapor. By providing the disk 41 a rush of too much air into the lower part of the cylinder 35 is prevented.

I have shown the cylinders 37 provided with handles 53, by which the burners 7 may be turned and adjusted on the cup 29 of the base 21.

The enlarged chamber 16 is of utility when first putting the stove into operation. At this time the oil, having a short distance to travel in frictional contact with the pipe, reaches the burner quickly. When the stove is first started, the oil flows from the tank to the burner very quickly by virtue of the fact that it does not come in contact with the walls of the enlarged pipe, but falls by gravity through this pipe, and in like manner when the tank is closed there is very little oil between the tank and the burner compared with what there would be if the pipe were small and the oil was moving along the surface of the pipe. This oil that is between the tank and the burner when the former is turned off keeps up a diminished flame at the burner, and with a small pipe down which the oil would flow in frictional contact with the pipe there would be so much oil between the tank and the burner that the flame would continue to burn for some time, and all this time the stove is giving off a disagreeable odor, as is well known, owing to the imperfect combustion.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. A vapor-stove comprising a burner, an elevated supply-tank located at a considerable height above the burner so as not to be affected by the heat of the latter, a needle-valve controlling the flow of oil from the tank, a discharge-nipple connected with the needle-valve adjacent to the tank, a feed-tube surrounding the nipple, and extending vertically from near the tank to a point near the burner, and a lateral supply-pipe; said tube being made sufficiently large to permit the oil to be introduced in free falling drops from the nipple without touching the walls of the pipe, so that on one hand a rapid extinction of the flame follows the cutting off of the feed and on the other hand a quick supply of oil to the burner is afforded on the opening of the valve while the valve is situated sufficiently remote from the burner as not to be affected by the heat of the latter.

2. In a vapor-burner, the combination of a base constructed to permit the passage of air, a vaporizing-cup located on the base, the inner perforated cylinder having a closed top, the outer perforated cylinder arranged over the vaporizing-cup, an outer imperforate cylinder surrounding the perforated cylinders, an imperforate diaphragm located within said

inner perforated cylinder, and a central air-tube extending through the base of the burner to a point above said diaphragm and discharging against the closed top; substantially as set forth.

5 3. In a vapor-burner, the combination of a base constructed to permit the passage of air, a vaporizing-cup located on the base, the inner perforated cylinder having a closed top, and the outer perforated cylinder arranged over the vaporizing-cup, an outer imperforate cylinder surrounding the perforated cylin-

ders, an imperforate and a perforated diaphragm located within said inner perforated cylinder, a disk located beneath said perforated diaphragm, and a central air-tube extending through the base of the burner to a point above said imperforate diaphragm, and discharging against the closed top; substantially as set forth.

LOUIS STOCKSTROM.

In presence of—

E. S. KNIGHT,
STANLEY STONER.