

No. 680,639.

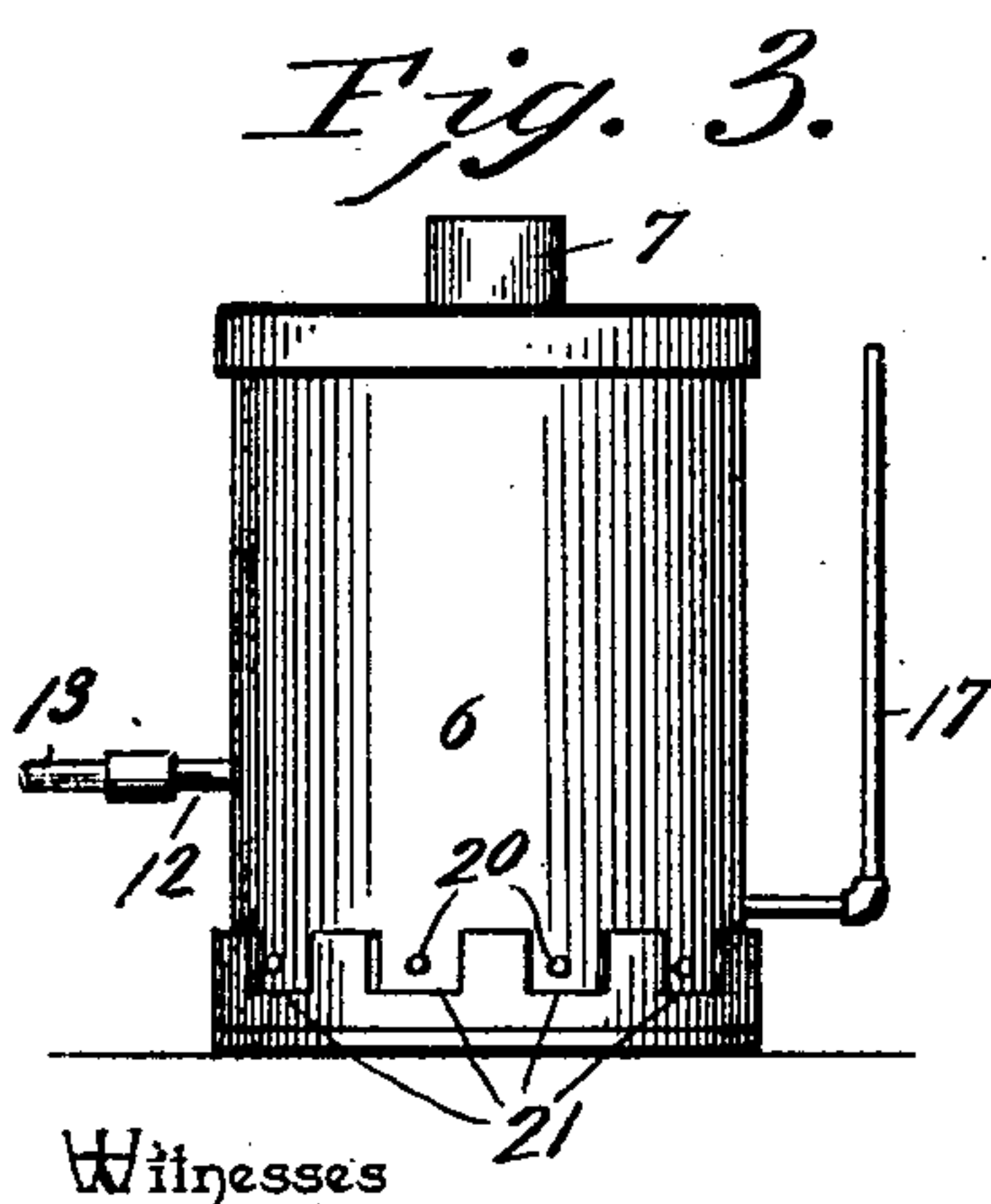
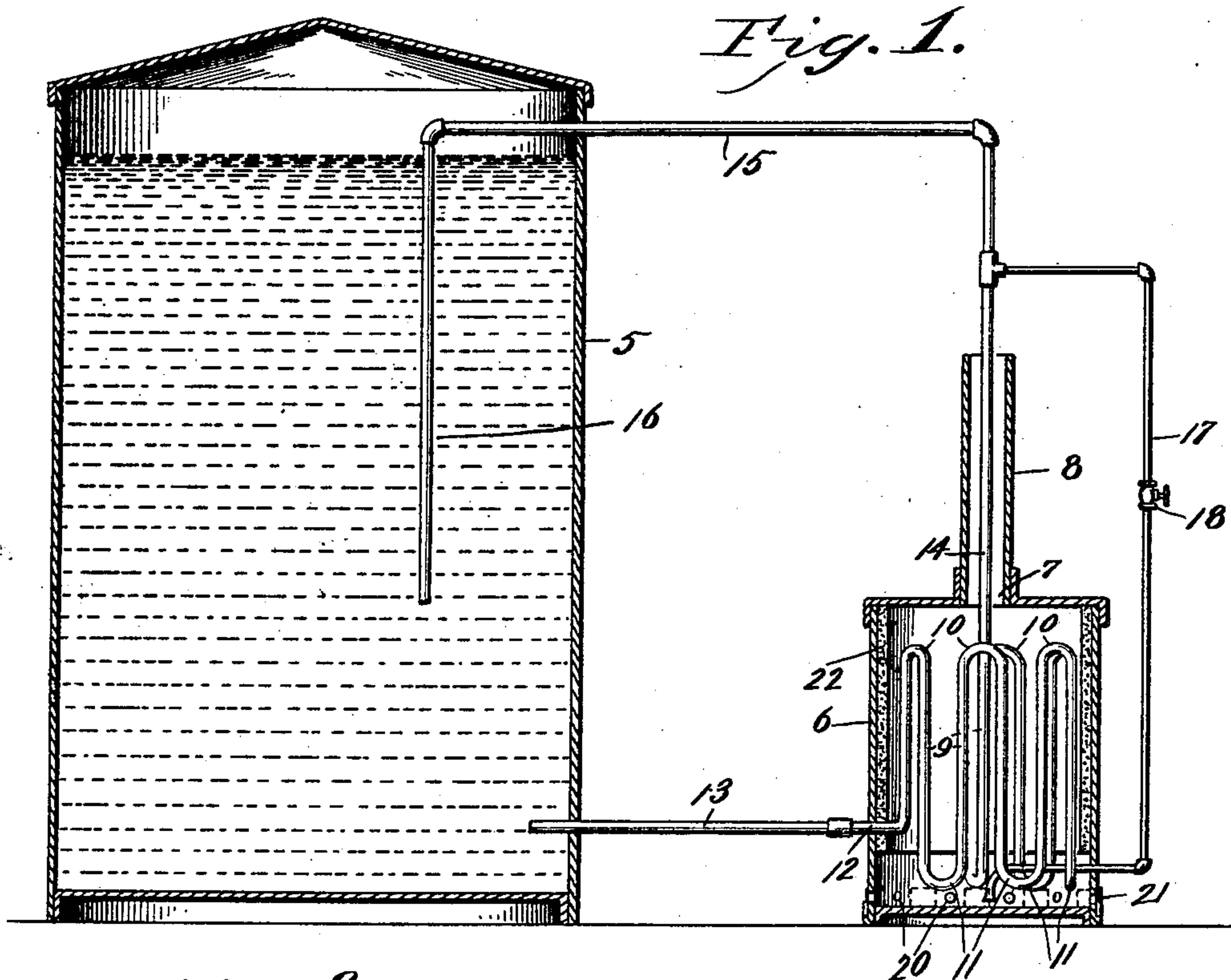
Patented Aug. 13, 1901.

G. F. CARTER.
OIL PURIFIER.

(Application filed Feb. 13, 1901.)

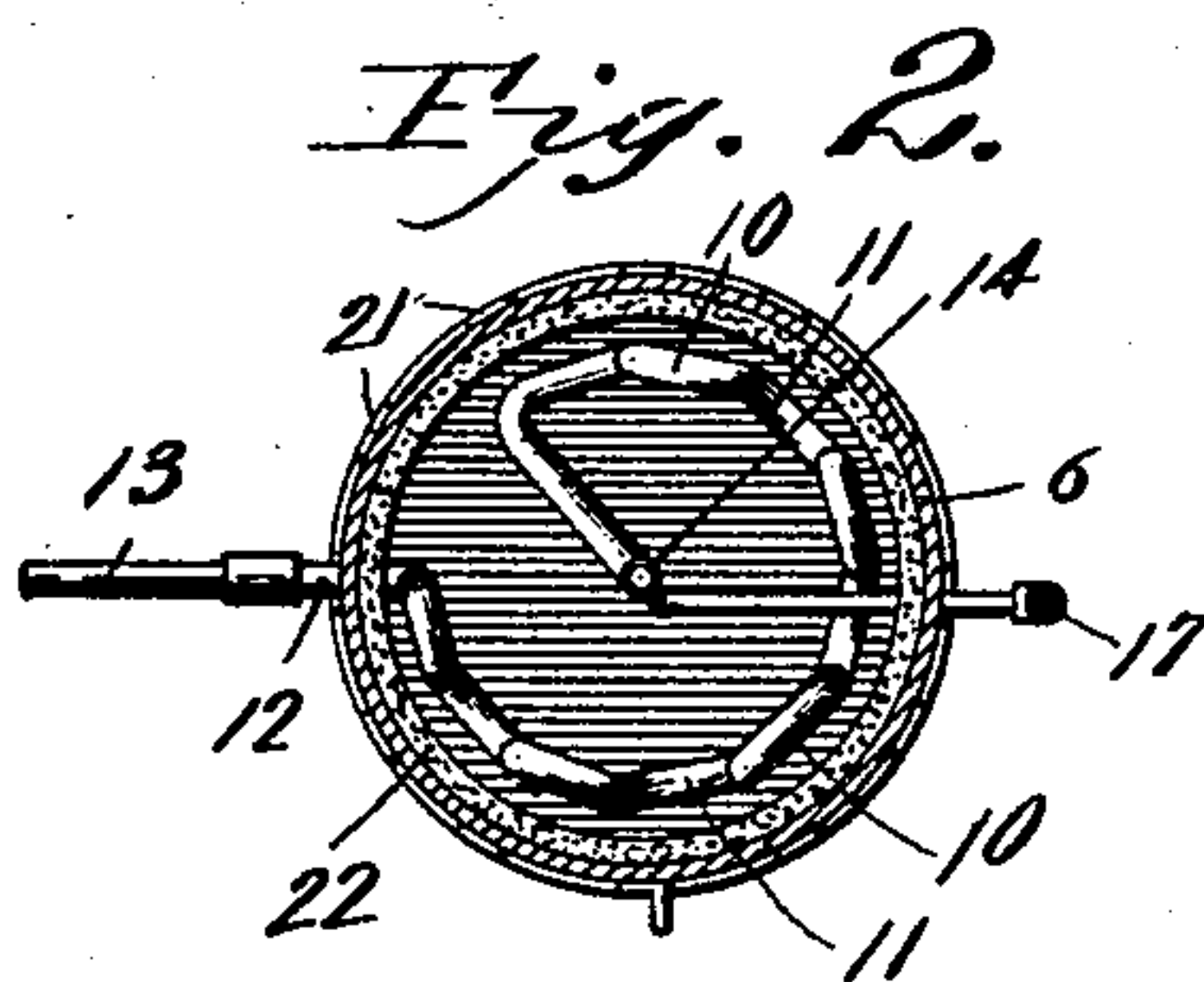
(No Model.)

2 Sheets—Sheet 1.



Witnesses

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Geo. H. Chandler



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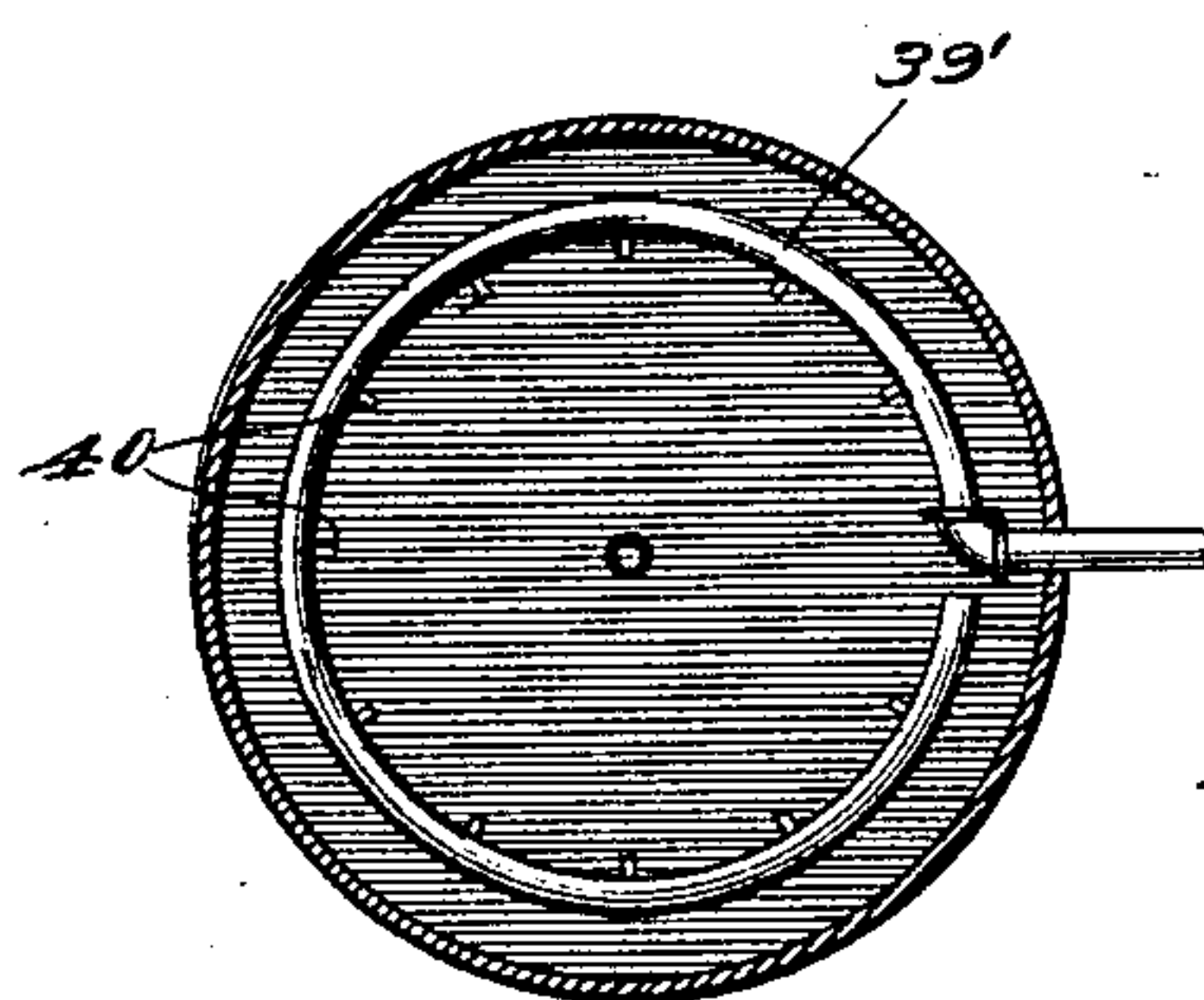
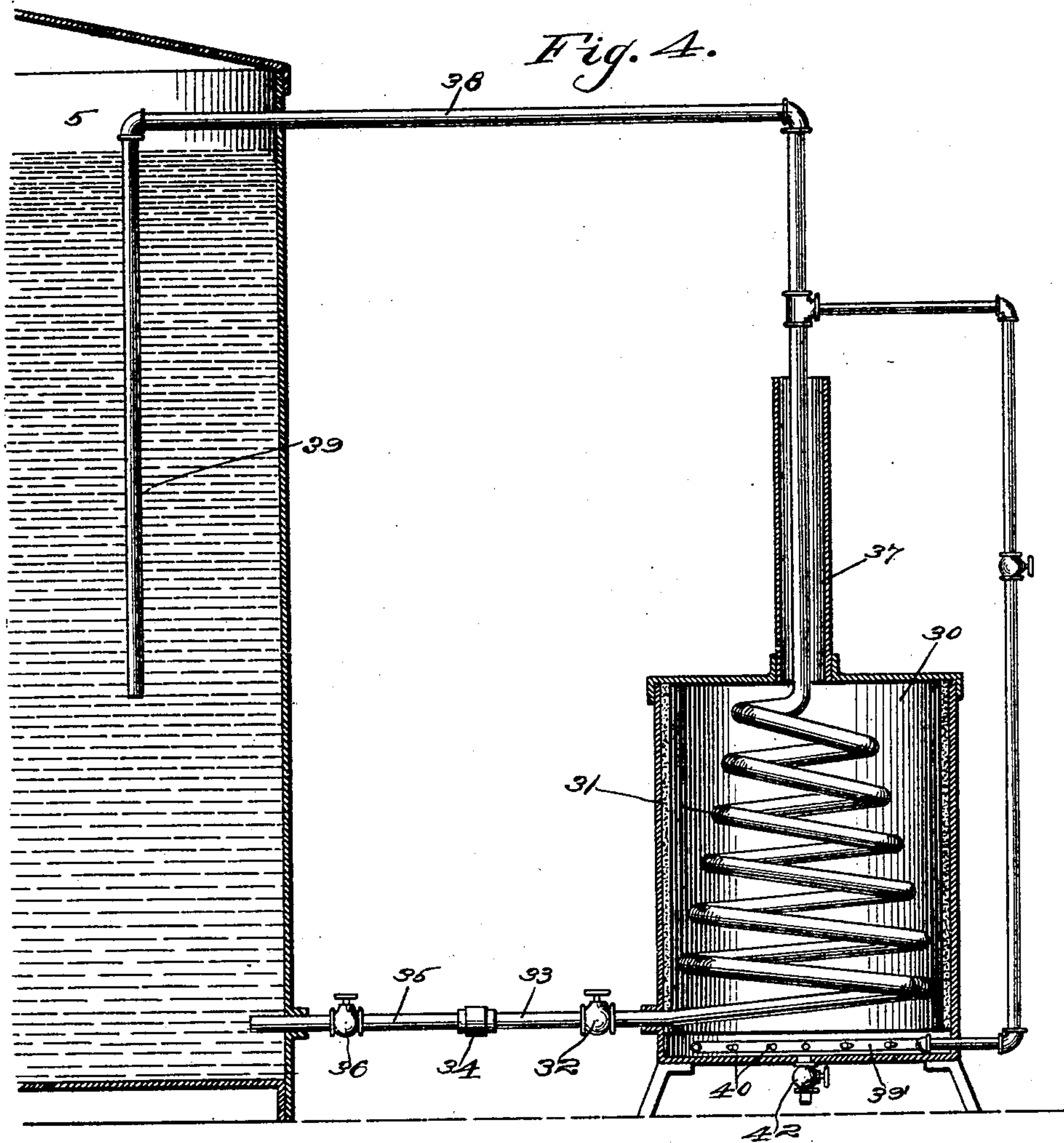
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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

GEORGE FITZHUGH CARTER, OF CORSICANA, TEXAS.

OIL-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 680,639, dated August 13, 1901.

Application filed February 13, 1901. Serial No. 47,171. (No model.)

To all whom it may concern:

Be it known that I, GEORGE FITZHUGH CARTER, a citizen of the United States, residing at Corsicana, in the county of Navarro and State of Texas, have invented a new and useful Oil-Purifier, of which the following is a specification.

This invention relates to oil-purifiers; and it has for its object to provide a construction wherein the oil may be quickly and economically heated to cause the impurities to separate from the oil.

A further object of the invention is to provide a construction that is simple and cheap in itself and which may be operated at a minimum cost, additional objects and advantages of the invention being evident from the following description.

In the drawings forming a portion of this specification, and in which like numerals of reference indicate similar parts in the several views, Figure 1 is a vertical section through both the storage-tank and the heating-drum, the heating-coil within the drum being shown in elevation. Fig. 2 is a transverse section through the heating-drum, the coil being shown in plan. Fig. 3 is a side elevation of the heating-drum. Fig. 4 is a view similar to Fig. 1 and showing a different form of heater. Fig. 5 is a section on line 55 of Fig. 4.

Referring now to the drawings, 5 represents a storage-tank for the crude oil and may be of any desired capacity, and in this tank is held the oil with its impurities, consisting of water, both fresh and salt, mud, and other foreign matter. The impurities mentioned may be separated from the body of the oil by heating the mass; but to heat the entire quantity in the tank at one time and maintain the proper temperature for the required length of time requires such an amount of fuel as renders the process unprofitable.

In the present apparatus there is provided a heating-drum 6, having a closed bottom and provided with a cover in which is a vent-opening 7, from which leads a smoke pipe or stack 8 of suitable height. Within the drum 6 is disposed a pipe-coil, including a plurality of vertical portions 9, which lie in close proximity to the inner face of the drum and which are connected alternately at their upper and lower ends by the bends 10 and 11, the bends

10 being spaced slightly below the top of the drum and the bends 11 lying slightly above the lower end of the drum. One end 12 of the coil is taken outwardly through the wall of the drum at a point above the bends 11, and is connected with a feed-pipe 13, leading from the tank 5 through the side thereof at a point near to its bottom. The end 14 of the pipe-coil is taken inwardly and radially of the heating-drum to the center thereof and is then bent upwardly and is taken out through the opening in the top of the drum and through the stack, above which it is connected with a return-pipe 15, which leads into the tank 5 at a point near to its top, and within the inclosure of the tank is connected with a vertical pipe 16, leading to a point near to the bottom of the tank, although somewhat above the pipe 13. A fuel-supply pipe 17 is connected with the pipe 15 at its point of connection with the pipe-coil and extends outwardly, then downwardly, and then inwardly through the side of the heating-drum and has its extremity turned downwardly to discharge centrally of the drum and below the line of the turns 11 of the pipe-coil. In this fuel-feed pipe is a regulating-valve 18, and through the pipe oil is fed to the bottom of the heating-drum, where it is burned to heat the oil in the coil. The heated oil rises and there is thus induced a circulation through the coil, oil being taken in from the bottom of the tank and discharged thereto at a higher point, and in this way the entire mass of oil, with its impurities, is heated and returned to the tank, where the impurities separate from the oil.

To supply a draft to the heating-drum, openings 20 are formed in the side and near to the bottom, and a ring is slidably mounted on the exterior of the drum and has openings 21, which may be brought to register with the openings 20 and which when moved from registry therewith are displaced, so that imperforate portions of the ring close the perforations or cover the perforations 20.

The heating-drum is provided with a lining 22, of asbestos or similar material, which terminates short of the bottom of the drum, so as not to dip into the oil.

In Figs. 4 and 5 there is shown in connection with the tank 5 a different style of heater,

including a drum 30, similar to the drum 6, but in which is disposed what is known as a "beehive-coil" 31, one end of which is passed through an opening in the side of the drum
5 and is provided with a globe-valve 32, at the opposite side of which is a pipe-section 33, connected by a union 34 with another section 35. The section 35 is connected with a globe-valve 36, which in turn is connected
10 with the bottom of tank 5. These valves permit of disconnecting the drum and its coil from the tank without leakage of oil from either. The upper end of the beehive-coil is taken upwardly through the stack 37 and is
15 connected with the upper portion of the tank by means of pipe 38, having connected thereto the pipe 39, which extends downwardly into the tank. A burner for heating the coil consists of a section of pipe 39, which is bent
20 into circular form and is provided with radially-projecting nipples 40 to support the flames, and this burner is connected with the pipe 38, as shown. The beehive style of coil permits of efficient drainage when the coil is
25 to be cleaned of sediment, and to drain the drum a valve 42 is provided.

What is claimed is—

1. An oil-purifier comprising a storage-tank, a heating-drum, a pipe-coil comprising verti-

cal portions connected alternately at opposite 30 ends and disposed adjacent to the sides of the drum, one end of said coil being connected with the tank adjacent to its bottom and the other end of the coil being passed upwardly from the drum and connected with 35 the tank at a higher point, and a fuel-feed pipe connected above the coil and between it and the tank and disposed to discharge into the drum below the coil therein.

2. An oil-purifier comprising a storage-tank, 40 a heating-drum including a cylindrical body portion and a central vertical stack, a coil in the body portion, a pipe leading from the lower end of the tank to the lower end of the coil, a pipe leading from the upper end of the 45 coil through the stack and connected to the upper end of the tank, a burner in the body below the coil, and a pipe connected with the pipe passed through the stack at a point above the stack and leading downwardly and 50 vertically to the burner.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

GEORGE FITZHUGH CARTER.

Witnesses:

T. J. FINCH,
JOE SANDS.