

No. 611,674.

Patented Oct. 4, 1898.

H. T. BRADLEY.

CARBURETER.

(Application filed Aug. 17, 1896.)

(No Model.)

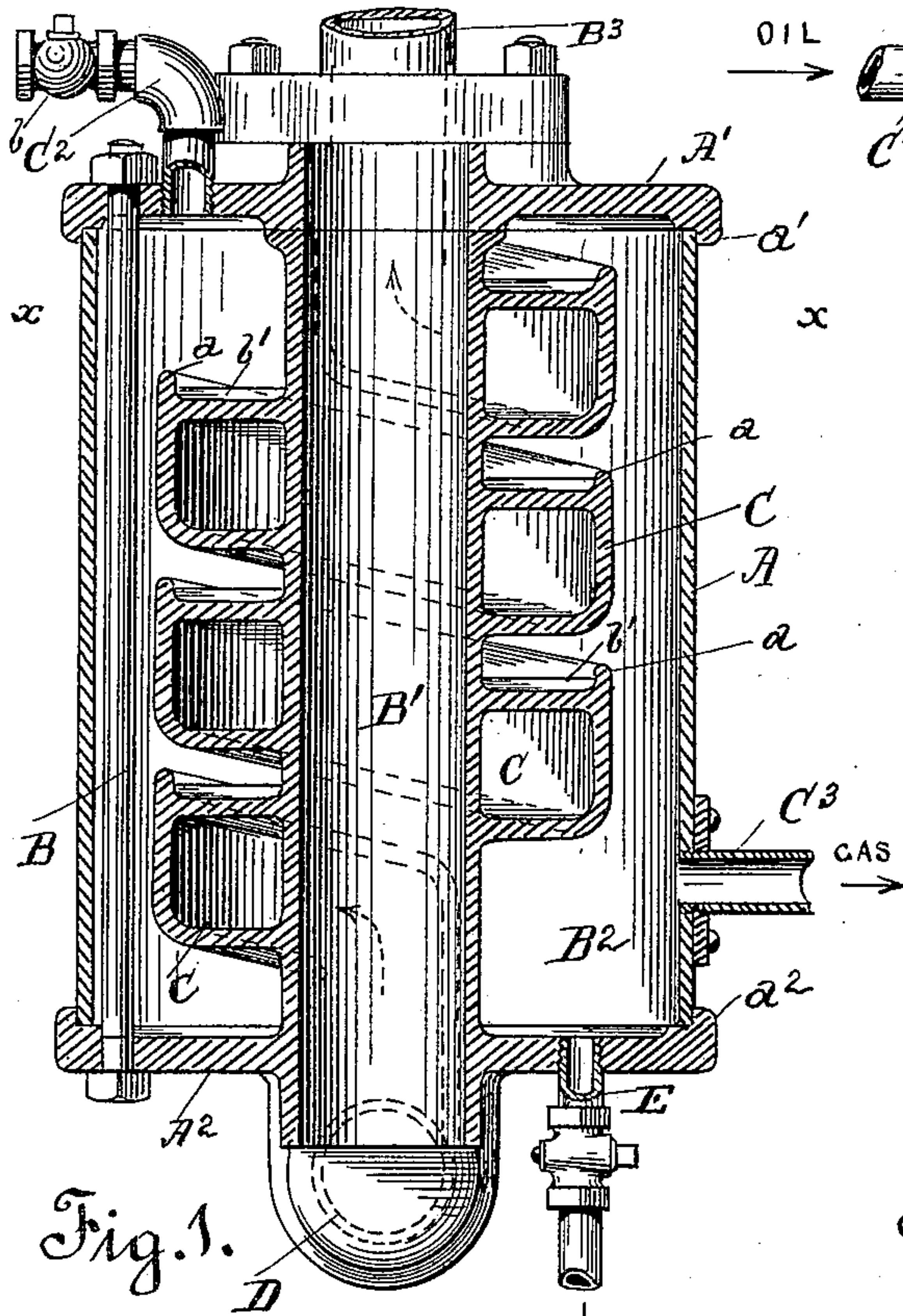


Fig. 1.

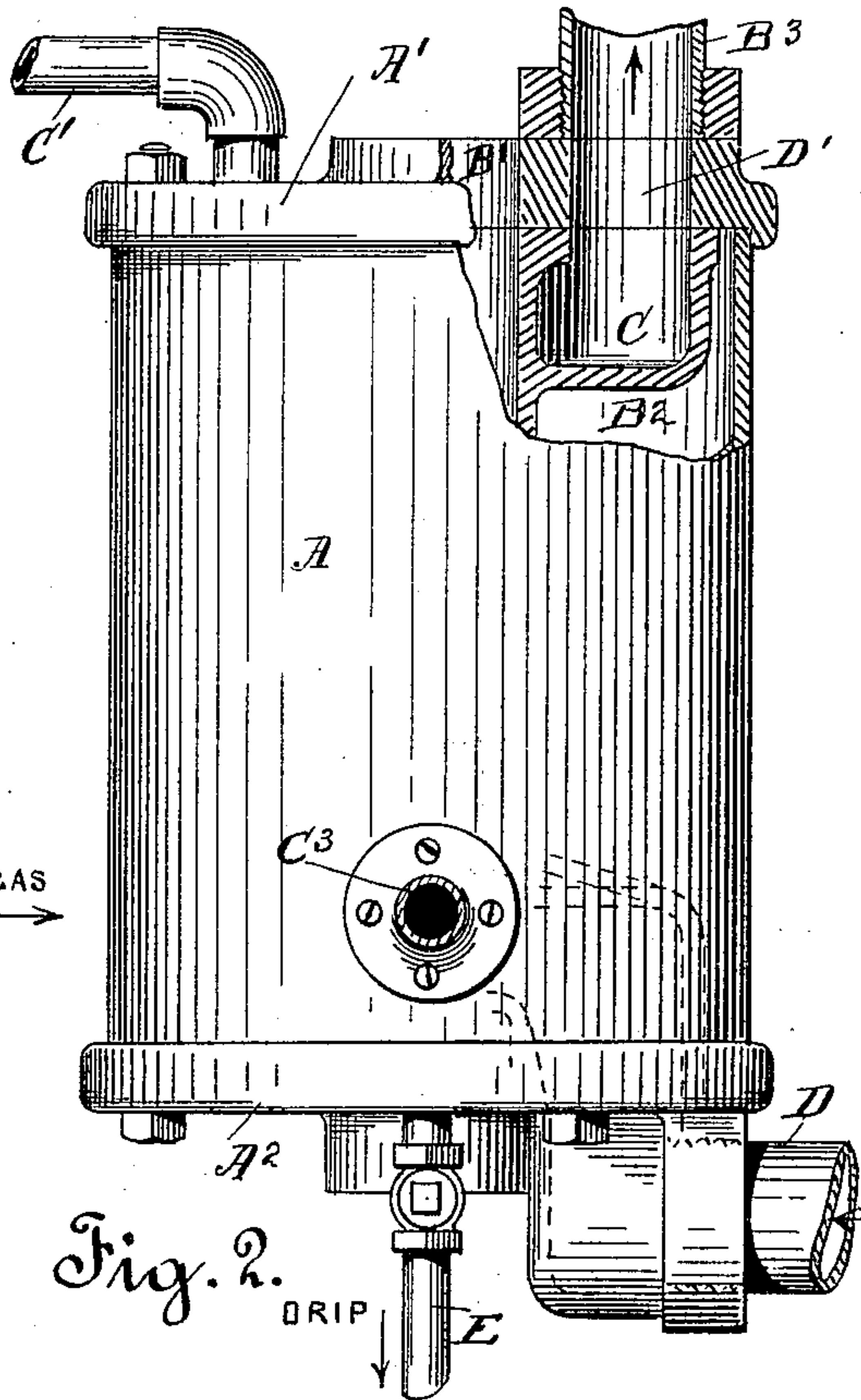


Fig. 2.

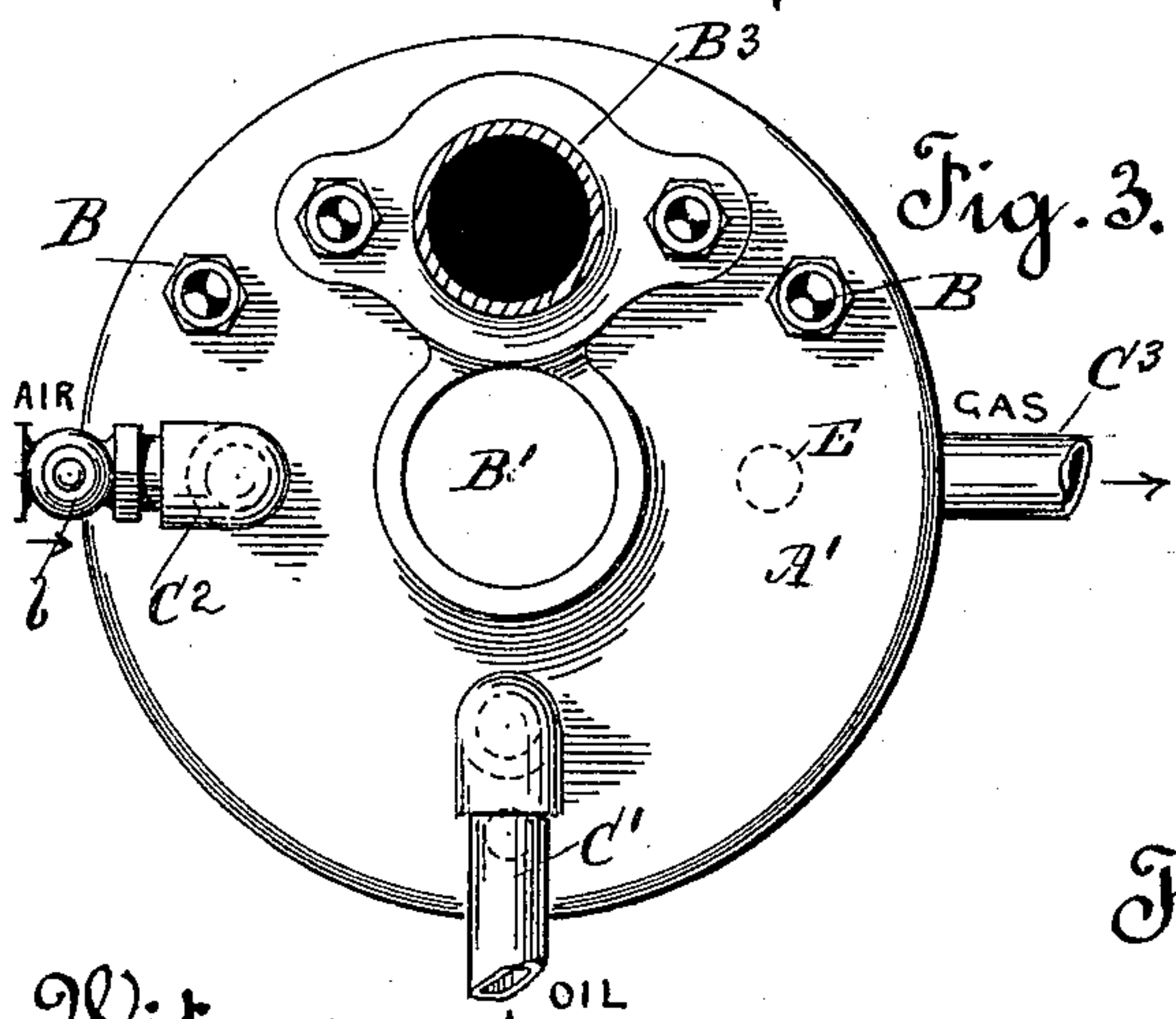


Fig. 3.

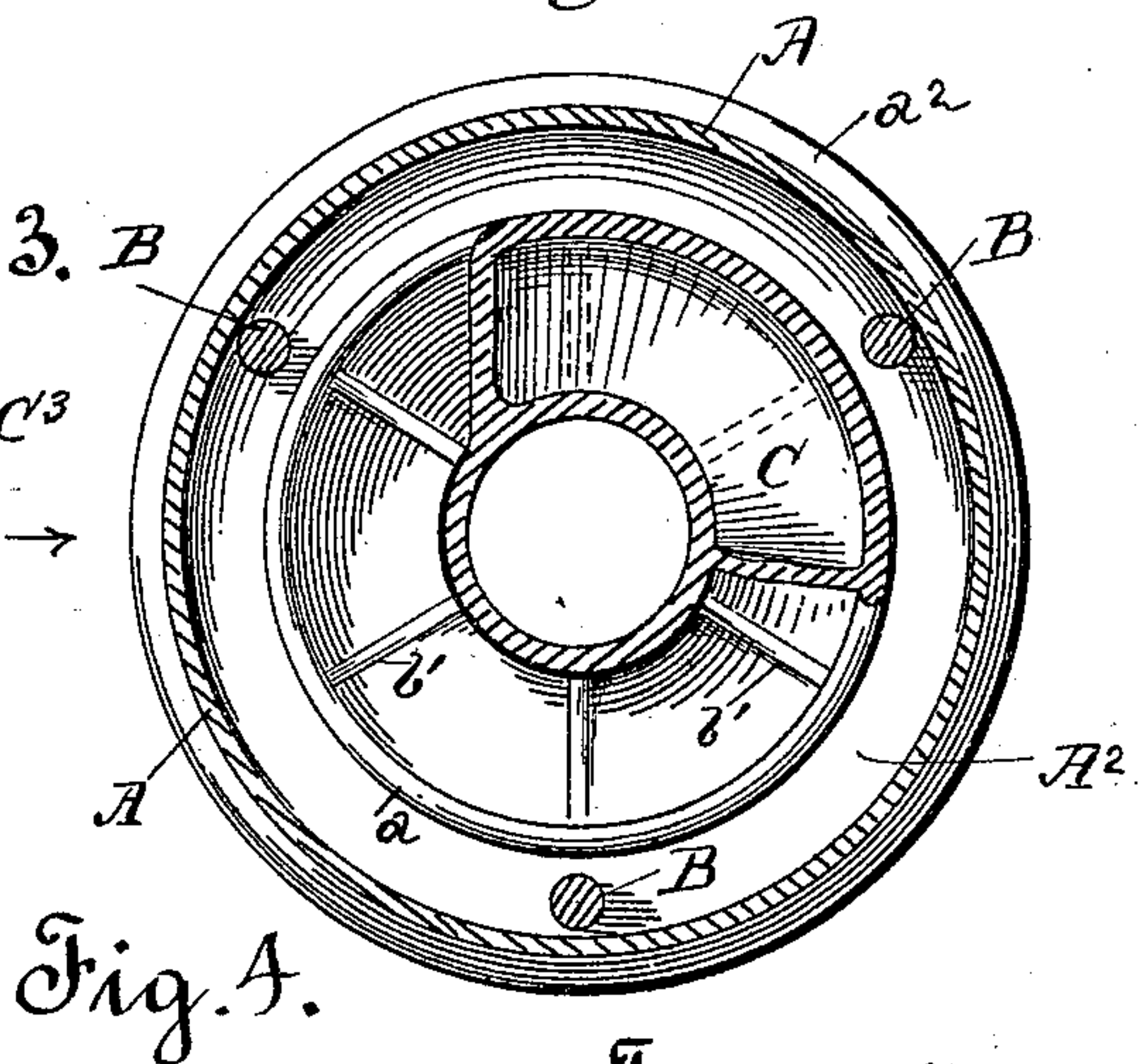


Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

HIRAM TILFORD BRADLEY, OF OAKLAND, CALIFORNIA.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 611,674, dated October 4, 1898.

Application filed August 17, 1896. Serial No. 602,930. (No model.)

To all whom it may concern:

Be it known that I, HIRAM TILFORD BRADLEY, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Carbureters; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to a certain new and useful carbureter for use in connection with gas, gasoline, or oil-operated engines; and it consists in the arrangement of parts or details of construction, as will be hereinafter fully set forth in the drawings and described and pointed out in the specification.

The object of the invention is to provide a carbureter wherein the oil will travel there-through in a helical or serpentine pathway and during its entire travel through the carbureter be subjected to the heat from the exhaust of the engine in order that the air flowing through the carbureter may become fully charged or impregnated with all possible volatile vapor of the oil, thus permitting use of the poorest grade or crude oil from which to successfully extract the volatile vapors necessary to create an explosive gas.

In order to fully comprehend the invention, reference must be had to the accompanying sheet of drawings, forming a part of this application, wherein—

Figure 1 is a vertical sectional view of the carbureter. Fig. 2 is a side view in elevation, partly broken away. Fig. 3 is a top plan view of the apparatus; and Fig. 4 is a cross-sectional top plan view taken on line $x x$, Fig. 1.

In the drawings the letter A is used to indicate the cylindrical or other shaped casing of the carbureter, to which the top A' and the bottom plate A² are connected by the tie-rods B, the upper edge of the casing fitting within the flange a' of the top plate A' and the lower edge thereof within the flange a^2 of the bottom plate. The bottom plate is preferably cast with the vertical pipe B', which extends centrally through the carbureting-chamber B², and registers with the central outlet-pipe B³, cast integral with the top plate A'. However, if so desired, the central vertical pipe may be formed separate from the top and bottom plates. Around the said central vertical pipe is cast or formed the helical exhaust-

pipe C, through which the products of combustion from the engine escape. This exhaust-pipe winds spirally around the central pipe within the carbureting-chamber from its top to its bottom, Fig. 1. The upper face or surface of this exhaust-pipe is made flat and is provided at its outer edge with the raised lip or upwardly-extending flange a , so as to form a helical passage-way within the carbureting-chamber for the volatile oil.

Through top plate A' extends the oil-inlet pipe C' and the air-inlet pipe C², the latter of which is provided with a controlling-cock b , and from the casing A near its bottom extends the outlet-pipe C³ for the gas or vaporized air, which pipe connects with the combustion-chamber of the engine. (Not shown.)

From the engine is run the pipe D, which pipe connects with the lower end of the exhaust-pipe within the carbureting-chamber, the upper end of the said exhaust-pipe communicating with or extending through the exhaust-opening D', formed in the top plate A', Fig. 2.

In order to prevent a too rapid flow of the oil through the helical oil passage-way and to maintain the flowing oil subject to the heat generated by the hot product of combustion flowing through the exhaust-pipe for the greatest length of time, there is interposed across the oil passage-way or top of the exhaust-pipe a series of cross-bars b' , which bars act as riffles and interrupt the downward flow of the oil by holding the same in check behind the bars until sufficient oil has accumulated to overflow the interrupting cross-bar. These cross-bars are placed a short distance apart throughout the entire length of the oil passage-way.

The oil entering the chamber B² from the oil-inlet pipe C' drops upon the upper face of the exhaust-pipe C and gradually flows downward in the passage-way formed therefor the entire length of the said exhaust-pipe. If the engine is running, the hot products of combustion or hot air therefrom flowing upward through the helical exhaust-pipe heat the surface of the said pipe and cause the vaporization of the volatile parts contained in the oil flowing thereover, which volatile vapor commingles or intermixes with the air flowing through the carbureting-chamber, so

as to form or produce an explosive gas. This gas flows from the carbureting-chamber to the combustion-chamber of the engine through the gas-outlet pipe C³. Owing to the cross-
 5 bars placed in the passage-way of the oil, its downward flow is considerably retarded and the oil exposed to the heated surface of the exhaust-pipe for a much longer time than if
 10 left to flow freely downward. By thus retarding the flow of the oil all the volatile parts will be vaporized therefrom by the time the oil has traveled the entire length of the helical exhaust-pipe, so that the residue of
 15 the oil will flow from the passage-way of the exhaust-pipe into the bottom of the carbureting-chamber in the form of a thick non-volatile oil. This residue is drawn from the carbureting-chamber by means of the drip-pipe E.

20 In order to secure an initial vaporization of the volatile products of the oil so as to start the engine, a lamp or other heating device is introduced into the lower end of the central pipe B'. The heat passing upward
 25 through this pipe causes the descending oil to throw out its volatile vapor, so as to create, by intermingling with the flowing air, gas by which to operate the engine. After the engine has started to work the exhaust there-
 30 from will thereafter serve to volatilize the oil.

By my carbureter, inasmuch as I extract all volatilized products, I am enabled to employ therein the cheapest grade of oil for the running of engines making use of carbureters.
 35 In fact, I am enabled to use the crude oil.

In the present case I have described and illustrated the oil passage-way and the exhaust-pipe as being in the form of a helix, although it will be readily understood that
 40 the said oil passage-way and exhaust-pipe may be in the form of a spiral or may be of a serpentine shape.

Having thus described my invention, what I claim as new, and desire to secure protection in by Letters Patent, is—
 45

1. In a carbureter, the combination with a

carbureting-chamber, an oil-supply, an air-supply, and a gas-outlet, of an open-ended pipe arranged within said casing, a pipe through which a heating medium is adapted
 50 to pass, arranged helically around said open-ended pipe and formed integrally therewith, the walls of the latter forming the inner wall of the helical pipe, and an upwardly-extending flange formed integrally on the upper
 55 outer edge of the helical pipe, and forming in conjunction with the upper wall of the helical pipe and the open-ended pipe a trough for the oil, substantially as described.

2. In a carbureter, the combination with a
 60 carbureting-chamber, an oil-supply, an air-supply and a gas-outlet, of an open-ended pipe arranged within said casing, a pipe through which a heating medium is adapted to pass arranged within said casing helically
 65 around said open-ended pipe, the walls of the latter constituting the inner wall of the said helical pipe, and an upwardly-extending flange on the upper outer edge of the helical pipe and forming in connection with the up-
 70 per wall of the helical pipe and the walls of the open-ended pipe a trough for the oil, substantially as described.

3. In a carbureter, the combination of a cylindrical casing, a cap for one end thereof,
 75 an open-ended pipe secured thereto and extending within said casing, a cap for the opposite end of the casing having an opening registering with said pipe, an oil-supply pipe, an air-supply pipe, a gas-outlet pipe, and a
 80 pipe through which a heating medium is adapted to pass arranged within said casing helically around said open-ended pipe and provided on its upper side with an oil passage-way, substantially as described. 85

In testimony whereof I affix my signature, in presence of two witnesses, this 7th day of August, 1896.

HIRAM TILFORD BRADLEY.

Witnesses:

LEE D. CRAIG,
 N. A. ACKER.