No. 828,274. PATENTED AUG. 7, 1906.

H. B. CORNISH.

CARBURETER.

APPLICATION FILED DEC. 16, 1904.

2 SHEETS—SHEET 1.

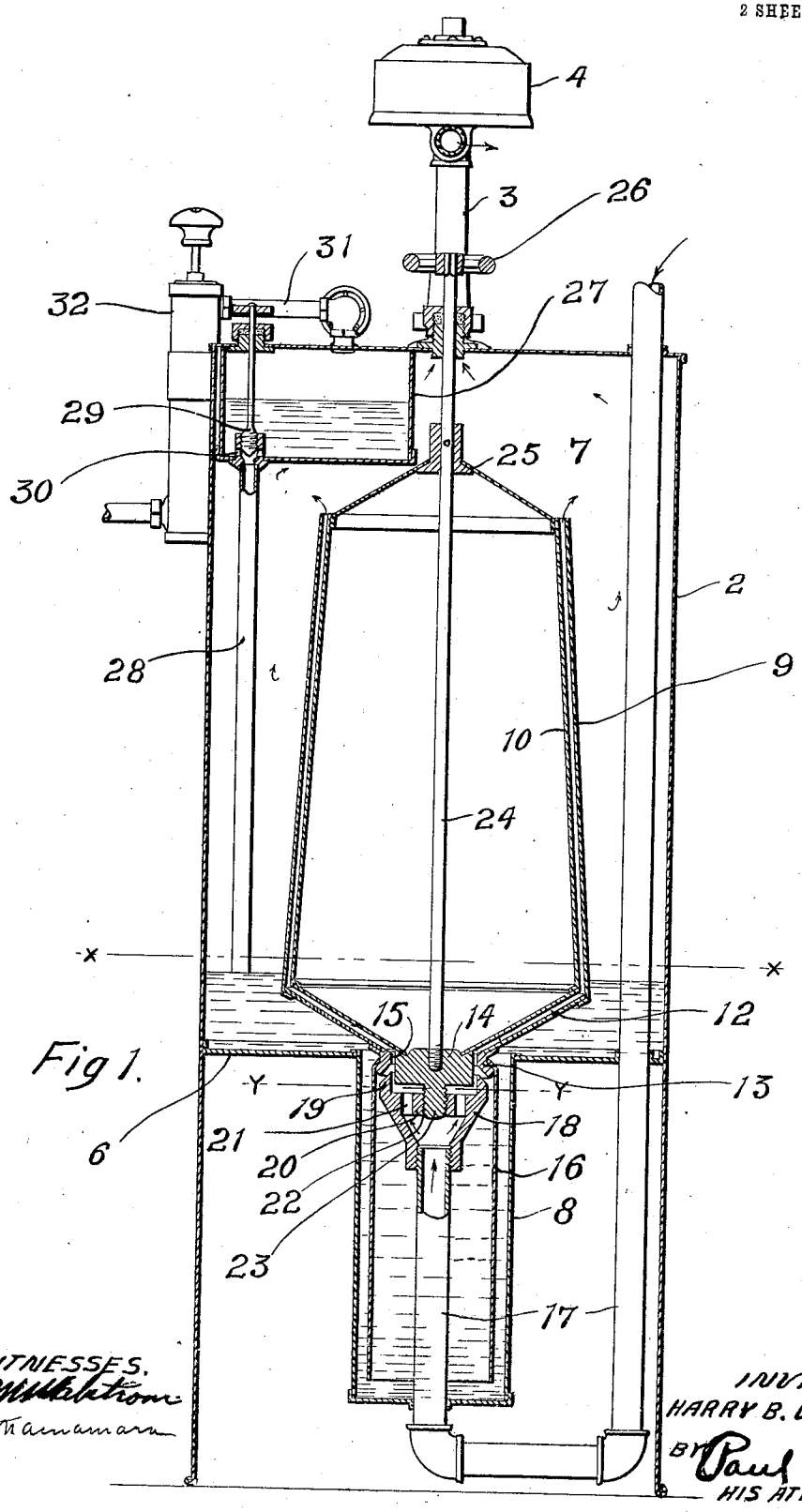



Fig 1.

WITNESSES.

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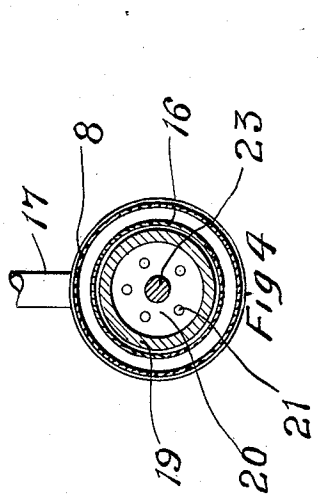



Fig 4.

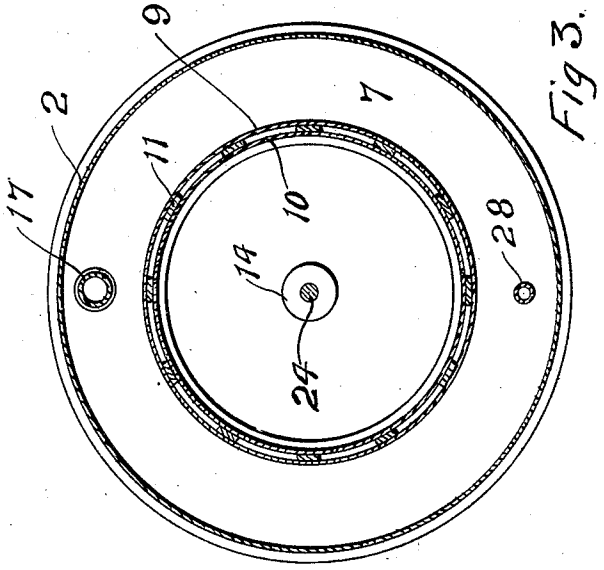



Fig 3.

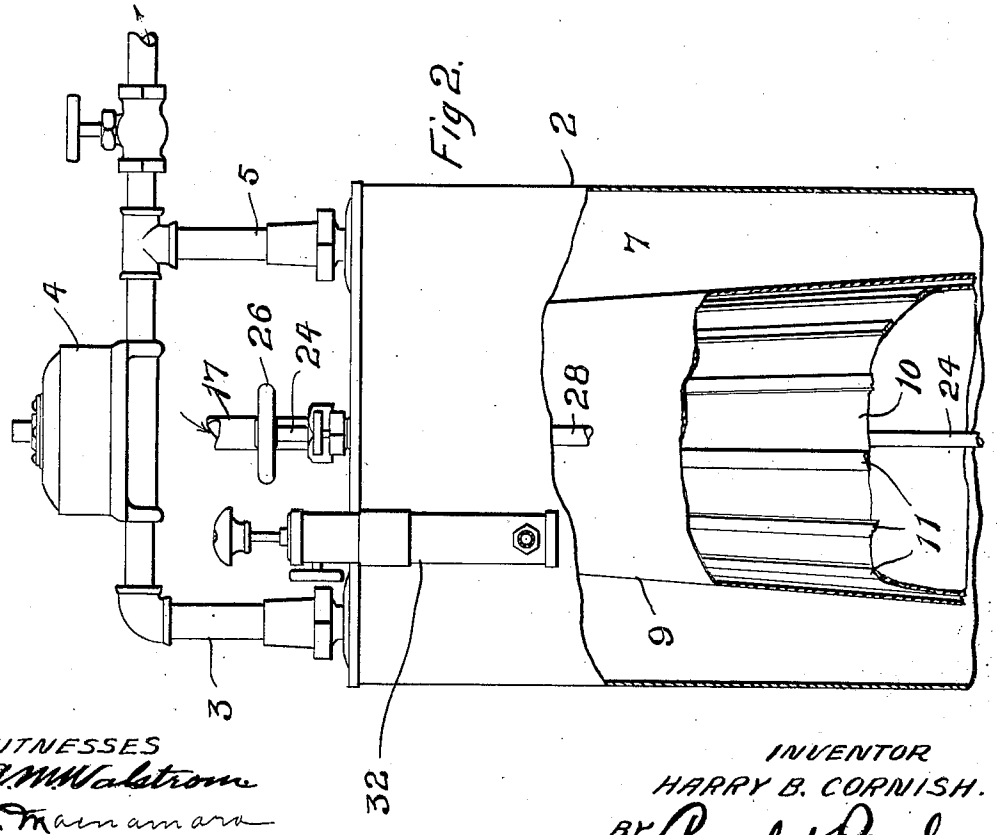



Fig 2.

WITNESSES

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# UNITED STATES PATENT OFFICE.

HARRY B. CORNISH, OF MINNEAPOLIS, MINNESOTA.

## CARBURETER.

No. 828,274. Specification of Letters Patent. Patented Aug. 7, 1906.

Application filed December 16, 1904. Serial No. 237,063.

*To all whom it may concern:*

Be it known that I, HARRY B. CORNISH, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention relates to carbureters of the portable type; and the object of the invention is to provide a machine that will be economical in the consumption of oil and will produce a uniform quality of gas and prevent any material variation in the lights.

The invention consists generally in providing means for regulating the area of the passage through which the oil is fed to mingle with the air.

Further, the invention consists in providing a confined space gradually increasing in area wherein the oil-laden air is allowed to expand and the oil thinned to prevent the separation of the air and oil after the carbureting operation is completed.

Further, the invention consists in contracting the confined space wherein the air and oil are mixed to insure the thorough mingling of the same.

Further, the invention consists in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical section of a carbureter embodying my invention. Fig. 2 is a side elevation of the upper portion of the same, a part of the wall being broken away, showing the interior construction. Fig. 3 is a horizontal section on the line $x\ x$ of Fig. 1. Fig. 4 is a similar section on the line $y\ y$ of Fig. 1.

In the drawings, 2 represents a suitable casing, preferably cylindrical in form, having a closed top provided with an outlet-pipe 3, a reducing valve or governor 4, through which the gas passes to the lighting system. A standard 5 supports the pipe 3 on one side of the casing. Within the casing 2 is a horizontal floor 6, separating the interior into two compartments or chambers, the upper one 7 forming the reservoir into which the gas is discharged to be conducted off through the pipe 3. A centrally-arranged well 8 is provided in the floor 6 and forms a reservoir for the oil, which in practice extends above the floor, as indicated in Fig. 1.

9 and 10 are double-cone-shaped members arranged one within another, separated by ribs or bars 11, that secure the cones together. These bars extend vertically at intervals between the cones and form vapor flues or passages that are open at the top for the discharge of the carbureted air. The form of the cones at the bottom provides a flaring confined space 12. A ring 13 is provided on the lower end of the cone 9, and a block 14 is secured to the corresponding end of the cone 10, an annular passage 15 being provided between said ring and block. A pipe 16, having an open lower end, is secured on the ring 13 and depends within the well 8 concentric therewith and terminating at a point near the bottom of said well. An air-intake pipe 17 projects up through the bottom of the well 8 and into the pipe 16 and conducts air into the machine from a suitable source of supply, such as a pump or compressor. A cup 18 is fixed on the upper end of the pipe 17 and has an annular flange 19 at its upper end that forms one wall of the passage leading into the space between the cones, while the ring 13 forms the other wall, their opposing surfaces being inclined or beveled to coincide when they are brought together. A partition 20 is provided in the cup 18, having holes 21 leading therethrough, and a centrally-threaded hole 22, that receives a threaded stud 23 on the bottom of the block 14. A rod 24 is attached to the block 14 and passes up through and is secured to the closed upper end 25 of the cone 10 and extending through the top of the casing 2 is provided with a hand-wheel 26. By moving this rod up and down the two cones are adjusted vertically with respect to the fixed cup 22 and the oil-inlet between them is increased or decreased in size to regulate the feed. When the rod is turned down to its lowest position, the oil-intake passage and the air-ports will be closed and further mixture prevented.

It is desirable in a machine of this kind to provide means for carrying a small quantity of gasolene in reserve. I therefore provide a reservoir 27 in the top of the tank, having a pipe 28 extending through the bottom and down near the floor 6 and provided with a plug 29, arranged to close the top of said pipe and prevent the flow of oil through the holes 30. A pipe 31 leads into said reservoir and communicates with a pump 32, by means of which the reservoir can be kept filled with oil.

The operation of the machine is as follows: The double cones having been adjusted to

provide a feed-opening of the desired area, the oil is allowed to flow out of the reservoir down into the well and up into the open-bottom tube 16. This tube is for the purpose of preventing the air from passing down through the feed-passage and bubbling up through the oil in the well. The air-blast entering the cup will flow up past the oil-intake passage and atomize the oil as it enters and causing it to spread out and become thinned as the air expands laterally in the flaring space between the lower ends of the cones. Upon reaching the outer edge of this space the air is forced by the shape of the cones to make a sharp turn, and then the space is gradually contracted and reduced in area for the purpose of effecting a thorough mingling of the air and oil before their discharge at the top of the cones. In this way I am able to effect a thorough mixture of the air and oil and obviate entirely all danger of the oil becoming separated from the air and dropping back into the oil-receptacle upon being discharged at the top of the cones.

I claim as my invention—

1. A carbureter comprising an inner and outer member vertically arranged and having a space between them and having depending conical lower ends, and a feed-passage leading to the space between said ends, means for regulating the cross-sectional ar a of said passage, and means for supplying oil and air under pressure to said passage and space, substantially as described.

2. A carbureter comprising an inner member having a depending conical lower end, an outer member inclosing said inner member and spaced therefrom, a feed-passage being provided near the apexes of the lower ends of said members and leading to the space between them, means for supplying oil to said passage, and means for conducting air under pressure into the space between said members and past said passage, substantially as described.

3. A carbureter comprising an inner member increasing in diameter from the top toward the bottom and having a depending conical lower end, an outer member corresponding in shape to said inner member and inclosing the same and spaced therefrom, a feed-passage being provided near the apexes of the lower ends of said members and leading to the space between them, means for supplying oil to said passage, and means for conducting air under pressure into the space between said members and past said passage, substantially as described.

4. A carbureter comprising an outer member having a depending conical lower end, an inner correspondingly-shaped member spaced from said outer member, a head or cup supported beneath the apexes of the lower ends of said members and communicating with a source of air-supply, the upper wall of said cup being separated normally from the lower wall of said outer member to allow the passage of oil into the space between said members, and means for regulating the cross-sectional area of the passage leading to the space between said members, substantially as described.

5. The combination with a tank having a well or depression in its bottom and adapted to contain a supply of oil, of members arranged within said tank, there being an inner and an outer member with a space between them communicating at the top of said members with the interior of said tank, and said members having depending conical lower ends also spaced from one another, said outer member having a pipe depending from its apex into said well, a head or cup provided within said pipe and communicating with an air-supply, and said cup having passages leading respectively from the air-supply and from the space inclosed by said pipe into the space between said conical lower ends, substantially as described.

6. A carbureter comprising an inner and outer member having a space between them, a cup provided below said members and having a feed-passage, a second feed-passage being provided between said cup and said members obliquely arranged with respect to said first-named passage and means for regulating the cross-sectional area of said second-named feed-passage, substantially as described.

7. A carbureter comprising an inner member having a depending conical lower end, an outer member inclosing said inner member and spaced therefrom, a feed-passage being provided near the apexes of the lower ends of said members and leading to the space between them, means for regulating the cross-sectional area of said feed-passage and means for conducting oil and air under pressure to said passage and space, substantially as described.

In witness whereof I have hereunto set my hand this 10th day of December, 1904.

HARRY B. CORNISH.

Witnesses:
RICHARD PAUL,
C. MACNAMARA.