J. A. KENWORTHY.

CARBURETER.

APPLICATION FILED SEPT. 21, 1908.

932,871. Patented Aug. 31, 1909.

Fig. 1.

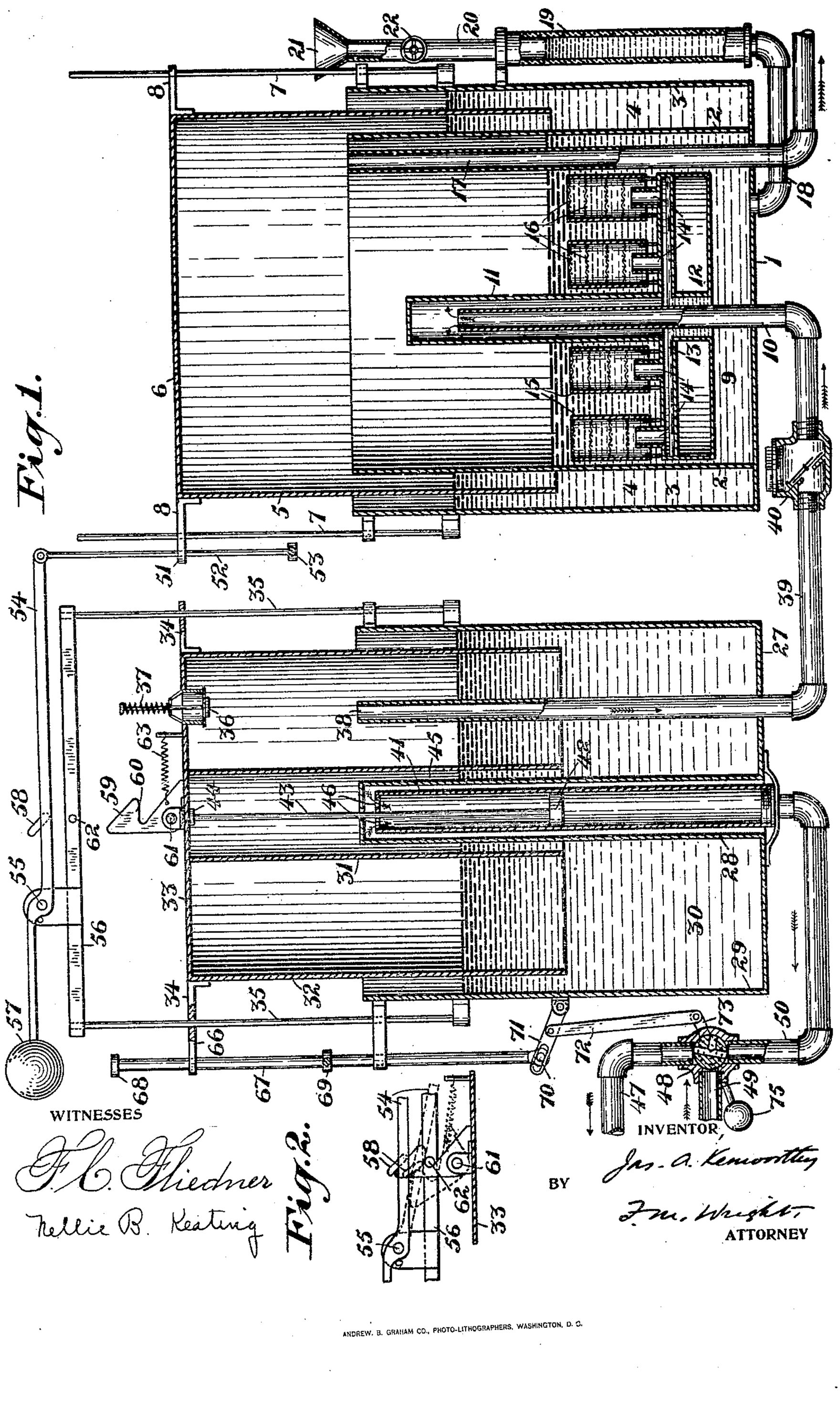

Fig. 2.



WITNESSES

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# UNITED STATES PATENT OFFICE.

JAMES A. KENWORTHY, OF OAKLAND, CALIFORNIA.

## CARBURETER.

932,871. Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed September 21, 1908. Serial No. 454,069.

*To all whom it may concern:*

Be it known that I, JAMES A. KENWORTHY, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Carbureters, of which the following is a specification.

The present invention relates to an improved apparatus for producing illuminating and fuel carbureted air from volatile oil, such as gasolene, distillate, and the like.

The object of the invention is to produce an apparatus of this character which is comparatively cheap and simple in construction, which may be readily moved from place to place where needed, which will furnish a large amount of gas in proportion to its size, with which the care and attention required may be reduced to a minimum.

In the accompanying drawing, Figure 1 is a vertical section of my improved apparatus; Fig. 2 is a detail view of the tripping mechanism.

The apparatus comprises a carbureter, in which the air is carbureted by forcing it through gasolene or other oil, which is also constructed to form a receiver for storing the air thus carbureted, and a pump for obtaining the necessary air pressure for so forcing the air through the oil.

Referring to the drawing, 1 indicates the bottom of a carbureter casing upon which are erected inner and outer cylindrical walls 2, 3, forming an annular water chamber 4. 5 is the cylindrical wall of a bell or receiver, depending into said annular space 4 and closed by a top 6. On the outer wall 3 are secured guide rods 7, and on the top of the bell are secured guides 8 which can slide on said rods.

The space 9 within the inner wall 2 forms a carbureting chamber, and air is, by means to be presently described, supplied to said chamber by a pipe 10, leading to a suitable height, centrally within the carbureting chamber 9, and discharging at the top into a tube 11 closed at the top and carried by an annular float 12. The air passing down on the outside of the pipe 10 and on the inside of the tube 11 escapes at the bottom of said tube 11 by a thin cylindrical chamber 13 to upstanding pipes 14, each of which discharges upwardly within the bottom of a cylindrical conduit 15. Across each conduit are arranged a suitable number of transverse horizontal fine wire screens 16. The purpose of these screens is to minutely divide the air, so that, in passing through the oil, it may be thoroughly impregnated with the oil vapor. The air thus passing through said screens eventually becomes saturated with oil vapor, so that it rises to the top of the receiver completely carbureted. This carbureted air is withdrawn from the receiver by means of a pipe 17 leading from a point above the water level to the gas main of the house or other place where it is to be used. From the bottom of the carbureting chamber a pipe 18 leads to a glass gage 19 for indicating the level of the oil therein, a filling pipe 20 leading upward from the top of said gage and having a funnel 21 at the top, and a valve 22 therein.

For the purpose of obtaining the necessary air pressure for forcing the air through the oil, I provide the apparatus shown on the left of Fig. 1, which comprises a base 27 upon which are erected inner and outer walls 28, 29, the space 30 between said walls being filled to a proper level with water. Into said space 30 depend inner and outer shells 31, 32, depending from a top of an annular air bell or receiver 33. The top of said air receiver is provided with guides 34 which slide upon guide rods 35 secured to the outer wall. The air enters said receiver at the top through a check valve 36 controlled by a spring 37, and discharges by means of a pipe 38 extending upward through the base to a height above the level of the water, the bottom of said pipe being connected by a pipe 39 through a check valve 40 with the pipe 10. It will thus enter the pipe 10 by means of said check valve 40, which immediately closes on again raising the air receiver.

In order to avoid the necessity of raising the air receiver by hand, I provide a water cylinder 41 in which reciprocates a piston 42 having a piston rod 43, which moves through the upper head of the cylinder and has a head 44 abutting against the top of the air receiver. Surrounding the cylinder 41 at a short distance is a casing 45, spaced at the bottom from said cylinder to allow of the escape of air the upper head of the cylinder being also formed with air vents 46, so that as the piston rises, air can escape through said vents, then in the space between the cylinder 41 and casing 45 and then out at the bottom. To automatically supply water to said cylinder to raise the bell, I provide

an inlet pipe 49 which leads to a three-way valve 48 connected with an outlet pipe 47, and also with a supply pipe 50 leading to the interior of the cylinder 41.

One of the guides 8 secured on the top of the receiver of the carbureter is extended to form a finger 51 and through said finger passes a rod 52. Adjustably secured thereon is a stop 53, and said rod is attached to one end of a trip lever 54 pivoted on a suitable fulcrum 55 upon a cross bar 56 supported at its ends upon vertical guide rods 35 secured to the sides of the outer wall 29 of the air receiver. The other end of said trip lever 54 carries a weight 57 to balance the weight of the part upon the operating side of the fulcrum. Extending from the side of the lever 54 is a plate 58, which, when the lever descends, is adapted to engage the nose 59 of a hook 60 pivoted at 61 upon the top of the receiver. Said hook is adapted, when the receiver is raised to pass over a stud 62 extending from said cross bar 56 and is moved into engagement therewith by means of a spring 63 attached to said hook and to the top of the receiver. But, when said trip lever descends, said trip plate 58, engaging said nose, pushes it out of engagement with said stud 62, so that the receiver is free to fall, which it does, forcing the air into the oil receiver, and thus carbureting the air.

One of said guides 34 attached to the top of the air receiver is extended to form a finger 66, through which passes a movable vertical rod 67 having upper and lower stops 68, 69, and when, in the descent of the air receiver, said finger strikes the lower stop 69, it causes said movable vertical rod to descend. The lower end of said rod is loosely connected, as shown at 70, to a lever 71, which is connected by a link 72 with a lever 73 attached to a three-way valve 48, having a balance weight 75. The result is that, when the rod descends, said valve 48 is turned, to cause water to pass into the cylinder 41 from the pipe 49, raising the cylinder, and the air receiver. When the latter arrives at a predetermined height, the finger 66 impinges against the upper stop 68, raises the rod 67 and thus turns the three-way valve, to allow the water to escape from the cylinder into the pipe 47, so that the air receiver can descend to force the air into the carbureting chamber.

The object of supporting the screen-carrying conduits by means of a float is to insure uniformity in the thickness of the body of oil through which the air passes, thereby also insuring uniformity in the degree to which the air is carbureted. With this object it is important that the float should be a sealed or closed float, in order that it may be of constant buoyancy, so as to always flow at a constant depth beneath the surface of the oil. It is also important that the conduits which carry the screens should be open at their lower ends for the admission of oil independently of the admission of air. This is obtained by supporting the lower ends of the conduits by posts upon the float, and providing comparatively narrow air inlet pipes 14. These pipes, being of much less diameter than the carbureting conduits, produce the result that the force of the air completely expels the oil from the pipe and produces an upward movement of the oil around the pipe and through the open lower end of the conduit.

The reason for spacing the carbureting conduits from each other and from the wall of the carbureting chamber, is that, thereby, the air emerging from the conduits is compelled to flow through the oil above the upper ends of the conduits, and cannot escape by flowing upward in contact with the wall of the carbureting chamber. In each carbureting conduit, the screens are arranged at a distance from each other considerably less than the diameter of the screens themselves. This arrangement renders it impossible for the air, after passing through a lower screen, to flow to the next screen above along the inner surface of the wall of the conduit, and thus avoid being carbureted.

I claim:—

1. In a carbureter, the combination of a carbureting chamber, means for supplying oil thereto, a completely closed hollow float, a carbureting conduit supported upon said float, a vertical series of screens arranged transversely across said conduit, and means for injecting air into the lower end of said conduit, substantially as described.

2. In a carbureter, the combination of a carbureting chamber, means for supplying oil thereto, a completely closed hollow float, a carbureting conduit supported upon said float, a vertical series of screens arranged transversely across said conduit, an air tube extending upward into the lower end of said conduit and spaced from the wall of the conduit, and means for forcing air upwardly through said tube, substantially as described.

3. In a carbureter, the combination of a carbureting chamber, means for supplying oil thereto, a completely closed hollow float, a carbureting conduit supported upon said float, a vertical series of screens arranged transversely across said conduit, an air tube extending upward into the lower end of said conduit and spaced from the wall of the conduit, the lower end of said conduit being opened around said tube, and means for forcing air upwardly through said tube, substantially as described.

4. In a carbureter, the combination of a carbureting chamber, means for supplying oil thereto, an annular hollow closed float, a plurality of carbureting conduits supported

on said float, an air supply pipe leading centrally through said float, a tube closed at the top into which the air supply pipe discharges, and pipes entering the lower ends of the respective conduits and connected with said tube, substantially as described.

5. In a carbureter, the combination of a carbureting chamber, means for supplying oil thereto, an annular hollow closed float, a plurality of carbureting conduits supported on said float, a vertical series of transverse screens in each conduit, an air supply pipe leading centrally through said float, a tube closed at the top into which the air supply pipe discharges, and pipes entering the lower ends of the respective conduits and connected with said tube, substantially as described.

6. In a carbureter, the combination of a carbureting chamber, means for supplying oil thereto, an annular hollow closed float, a plurality of carbureting conduits supported on said float, spaced from each other and from the walls of the carbureting chamber, an air supply pipe leading centrally through said float, a tube closed at the top into which the air supply pipe discharges, and pipes entering the lower ends of the respective conduits and connected with said tube, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES A. KENWORTHY.

Witnesses:
F. M. WRIGHT,
D. B. RICHARDS.