No. 793,786. PATENTED JULY 4, 1905.

A. H. HELMLE.

CARBURETER.

APPLICATION FILED SEPT. 6, 1904.

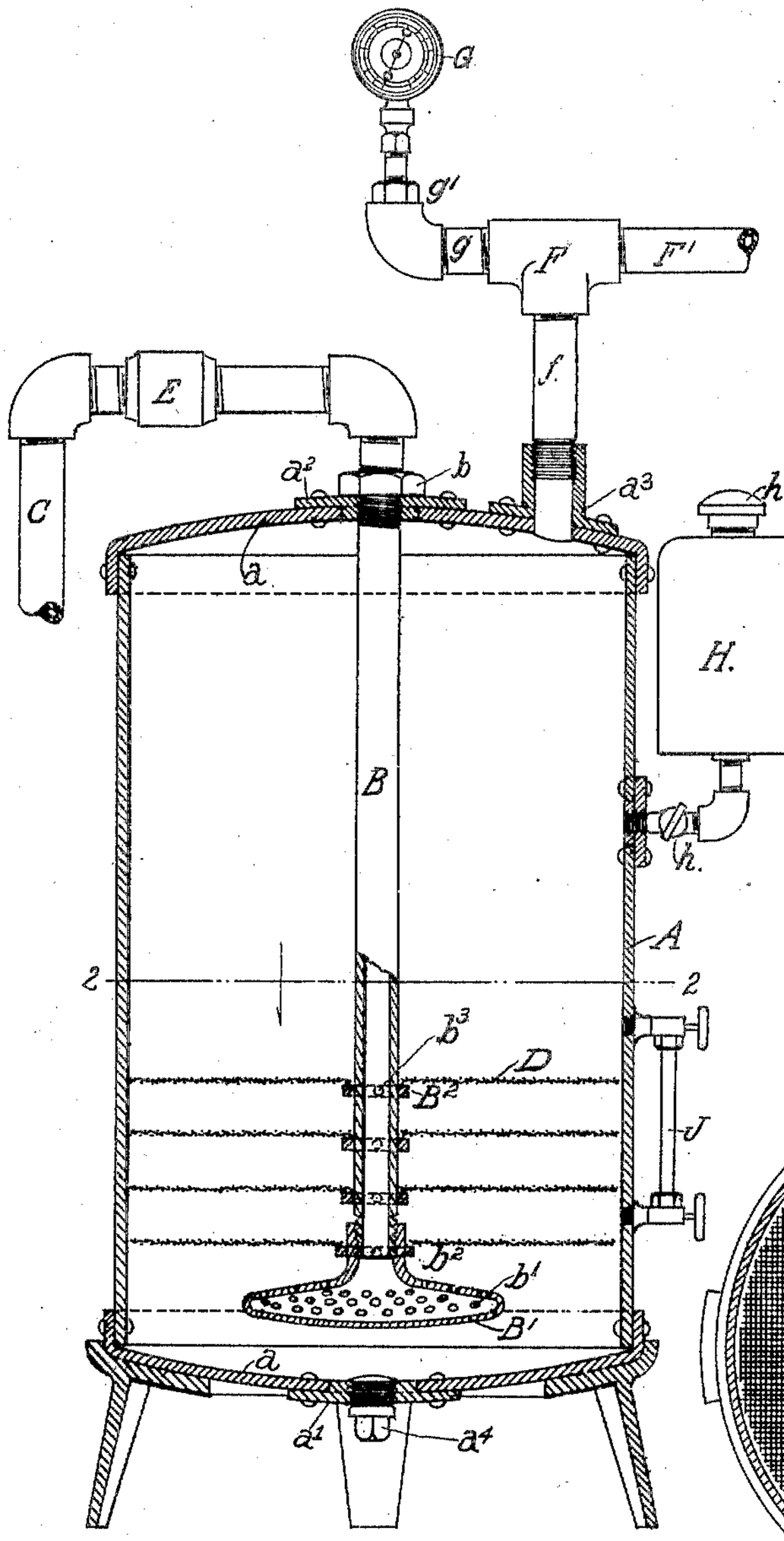

FIG. 1.

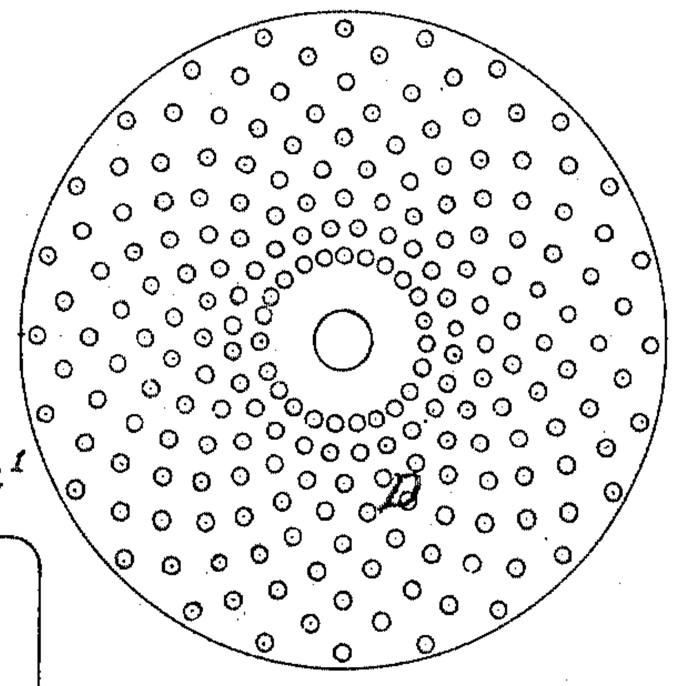

FIG. 3.

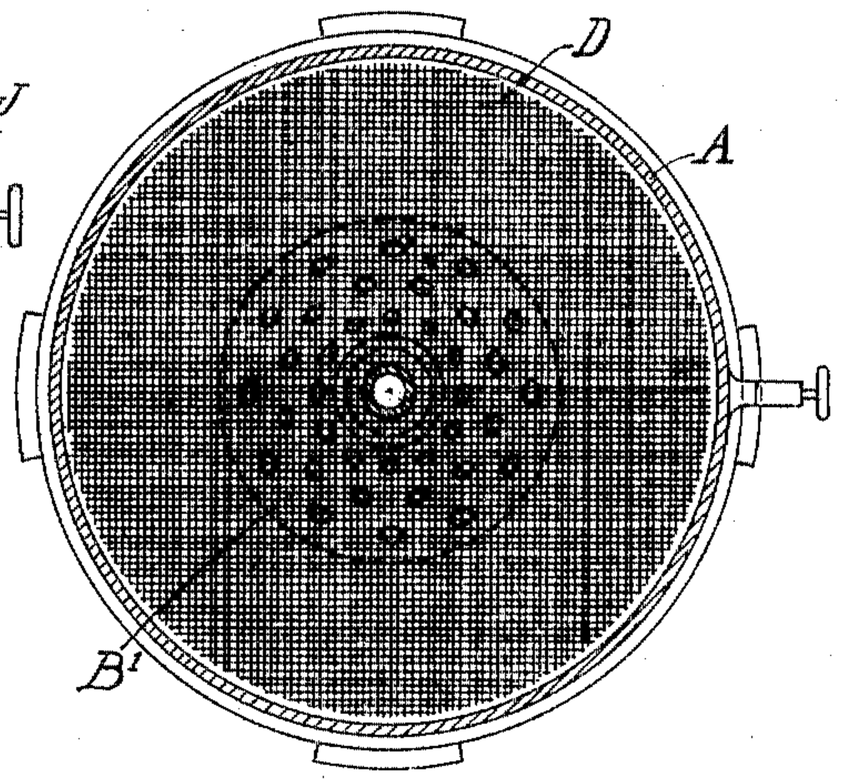

FIG. 2.

Witnesses.

O. A. MERKEL.

Victor Lorg.

Inventor.

ALBERT H. HELMLE.

By Atty. N. DuBois.

No. 793,786. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

ALBERT H. HELMLE, OF SPRINGFIELD, ILLINOIS.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 793,786, dated July 4, 1905.

Application filed September 6, 1904. Serial No. 223,445.

To all whom it may concern:

Be it known that I, ALBERT H. HELMLE, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Carbureters, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use my said invention.

My invention relates to apparatuses in which gas for illumination or heating is produced by carbureting air by the vaporization of gasolene or other suitable hydrocarbon contained in a suitable vessel.

The purposes of my invention are to provide an apparatus so constructed and arranged that the carbureting may be performed within a single carbureter-cylinder, said cylinder and accessories being so constructed and arranged as to afford a large superficial area acted against by the air introduced into the cylinder, as hereinafter explained; to provide simple and effective means for causing constant agitation of the hydrocarbon during the process of generating the gas; to provide improved means for introducing air into the cylinder; to provide means for introducing hydrocarbon into the cylinder; to provide means for indicating the pressure within the cylinder, and to provide means adapted to facilitate the removal of sediment from the cylinder.

With these purposes in view my invention consists in the novel features of construction and combinations of parts shown in the annexed drawings, to which reference is hereby made, and in which similar reference-letters designate like parts in the several views.

Referring to the drawings, Figure 1 is a vertical axial section through the carbureter-cylinder and shows the connected parts in elevation. Fig. 2 is a horizontal transverse section through the apparatus on the line 2 2 of Fig. 1, and Fig. 3 is a plan view of a modified form of an agitator-disk.

The carbureter-cylinder A is preferably of steel, having heads a riveted thereon. Reinforcing-plates a', a^2, and a^3 are riveted on the heads in the positions shown in Fig. 1. A plug a^4 screws into the opening in the plate a' and has a squared part on which a wrench may be used to turn the plug when it is desired to remove the plug to obtain access to the interior of the cylinder for the purpose of cleaning the cylinder. The air-induction pipe B, which is central to the cylinder, screws into the plate a^2 and is secured thereon by jam-nut b, fitting on the screw-threaded part of the pipe. The pipe B being central to the cylinder serves as a convenient support and guide for the disks, as hereinafter explained. A rose-nozzle B′, having perforations b' through its upper side and having an imperforate lower side, screws onto the lower end of the pipe B. The nozzle B′ has near its upper end an integral ledge b^2, on which one of the agitator-disks rests. Rings B^2 fit around the pipe B and are secured thereon by rivets b^3 passing transversely through the rings and through the pipe. Disks B are supported on the rings B^2, and the lower disk is supported on the ledge b^2 of the nozzle B′. The disks D are preferably of meshed wire fabric in diameter slightly less than the inside diameter of the cylinder; but any other perforate or reticulate material of sufficient rigidity—such, for example, as the perforated thin metallic disk shown in Fig. 3—may be used. The agitator-disks D fit loosely around and slide freely on the pipe B.

A pipe C, intercommunicating with the pipe B is connected with an air-compressor or other suitable source of air-supply. A check-valve E controls communication between the pipes C and B in such manner that the valves are automatically closed whenever the air-pressure within the pipe C falls below a previously-determined limit.

A T connection F is connected with the plate a^3 by a nipple f. The service-pipe F′ screws into one end of the T and conveys the gas away from the cylinder. A pressure-gage G is mounted on a pipe g, which screws into the T F and is secured thereon by a jam-nut g'.

A sheet-metal vessel H′ of suitable form and dimensions is mounted on the cylinder A, and the interior of the vessel intercommuni-

cates with the interior of the cylinder, the communication being controlled by a valve h, intermediate to the cylinder and the vessel. The vessel H has a screw-cap h'.

The hydrocarbon or other material employed in carbureting the air is introduced through the vessel H in the following manner: The valve h is first closed to shut off all communication between the cylinder and the vessel. The cap h' is then unscrewed, and the vessel is then filled with hydrocarbon or other material, and the cap is then again screwed on the vessel. The valve h is then opened to permit the contents of the vessel to run into the cylinder. By this means additional hydrocarbon may be supplied within the cylinder as occasion may require. Preparatory to operating the apparatus gasolene or other hydrocarbon is introduced into the cylinder in quantities sufficient to immerse the upper agitator-disk D. In practice it is desirable to keep the upper disk thus immersed. The level of the hydrocarbon within the cylinder is indicated by a glass J, mounted on the cylinder and intercommunicating with the interior of the cylinder. To replace the hydrocarbon consumed during the operation of the apparatus, additional hydrocarbon is from time to time introduced through the vessel H, as already described. The hydrocarbon having been introduced into the cylinder, air under pressure is admitted through the pipes C and B and passes out through the openings b' of the nozzle B'. The pressure of air acts against the under side of the disks to raise the disks; but owing to the reticulations through the disks any slight change in pressure will cause such slight changes in position of the disks as will permit the air to pass through the reticulations of the disks, and thereby permit the disks to gravitate until they again lie on the collars B^2. It will be seen then that the frequent slight variations of the air-pressure cause correspondingly-frequent vertical movements of the disks D, and these variations of air-pressure agitate the hydrocarbon in which the disks are immersed in such manner that the air is very thoroughly mingled with the hydrocarbon in a manner most effective for the production of gas. It will also be seen that the reticulations or perforations of the disks subdivide the air into minute parts and cause it to circulate through the entire volume of hydrocarbon in such manner that all parts of the hydrocarbon are alike effective in carbureting the air. It will also be seen that the peculiar construction of the disks shuts off or prevents such pressure of the air as would tend to raise the hydrocarbon bodily within the cylinder and eject it through the service-pipe.

Briefly stated, the construction is such that the air may be passed through the hydrocarbon without blowing the hydrocarbon out of the cylinder.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a carbureter, the combination of a cylinder, a central induction-pipe having collars, slidable agitators supported on the collars of said induction-pipe, a nozzle connected with the induction-pipe and having perforations through its upper side, and means for supplying air under pressure through said induction-pipe, as set forth.

2. In a carbureter, the combination of a cylinder, a central induction-pipe having collars, slidable agitators supported on the collars of said induction-pipe, a nozzle connected with the induction-pipe and having perforations through its upper side, an air-supply pipe communicating with said induction-pipe, and a check-valve between said air-pipe and induction-pipe, as set forth.

3. In a carbureter, the combination of a cylinder, an induction-pipe, an air-supply pipe communicating with said induction-pipe, a check-valve between said air-pipe and said induction-pipe, agitators slidable on said induction-pipe, a nozzle connected with the induction-pipe and supplying compressed air below the agitator, a charging vessel communicating with the interior of said cylinder, and means for controlling communication between said charging vessel and said cylinder, as set forth.

4. In a carbureter, the combination of a cylinder adapted to contain hydrocarbon or the like, an induction-pipe central to said cylinder, perforated agitators slidable on said induction-pipe below the level of the hydrocarbon contained in the cylinder, and means for supplying hydrocarbon to said cylinder, means for introducing air under pressure through the induction-pipe and forcing same through the hydrocarbon and through the perforations of the agitators, and a service-pipe communicating with the interior of the said cylinder, as set forth.

In witness whereof I have hereunto subscribed my name, at Springfield, Illinois, this 16th day of July, 1904.

ALBERT H. HELMLE.

Witnesses:
JOSEPH P. ABBOTT,
ROBERT H. DOOLING.