J. H. FRIEDENWALD.

CARBURETER,

APPLICATION FILED FEB. 12, 1910.

985,256.

Patented Feb. 28, 1911.

2 SHEETS—SHEET 1.

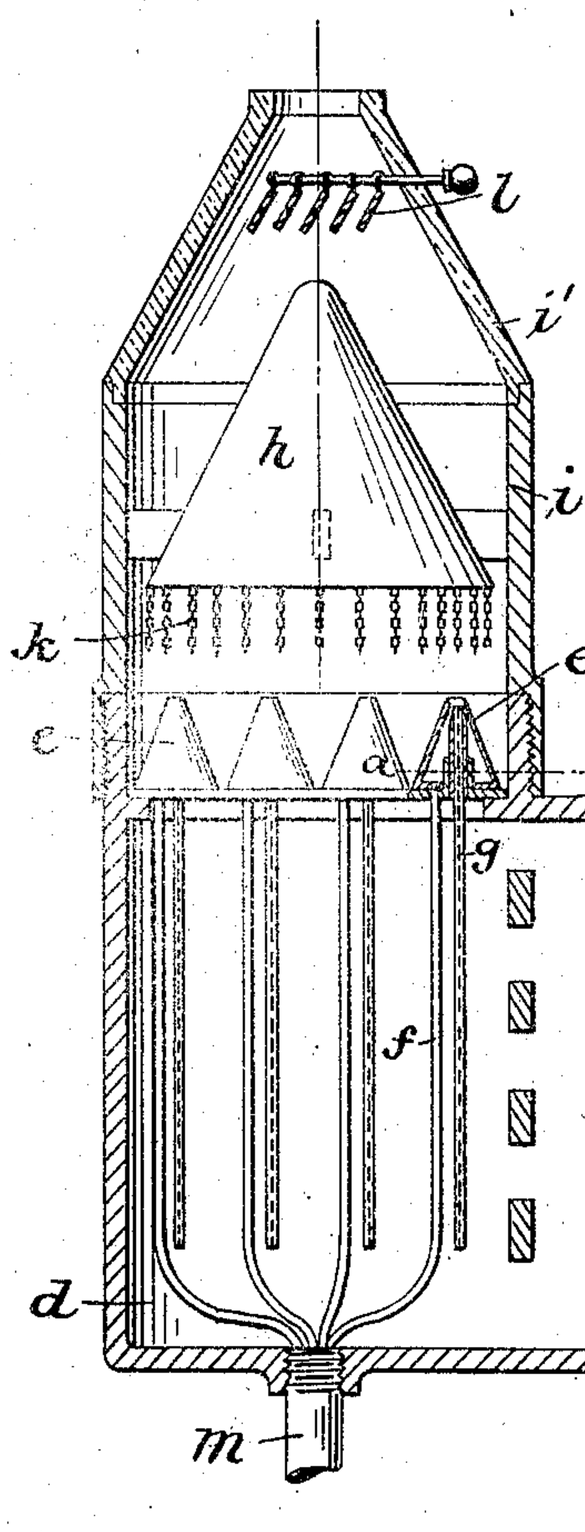


Fig. 1.

Fig. 3.

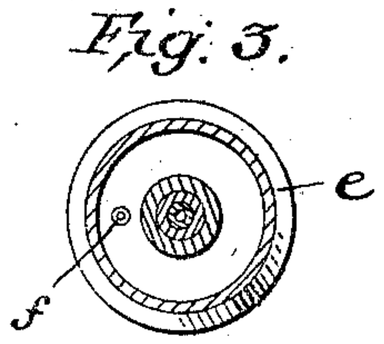
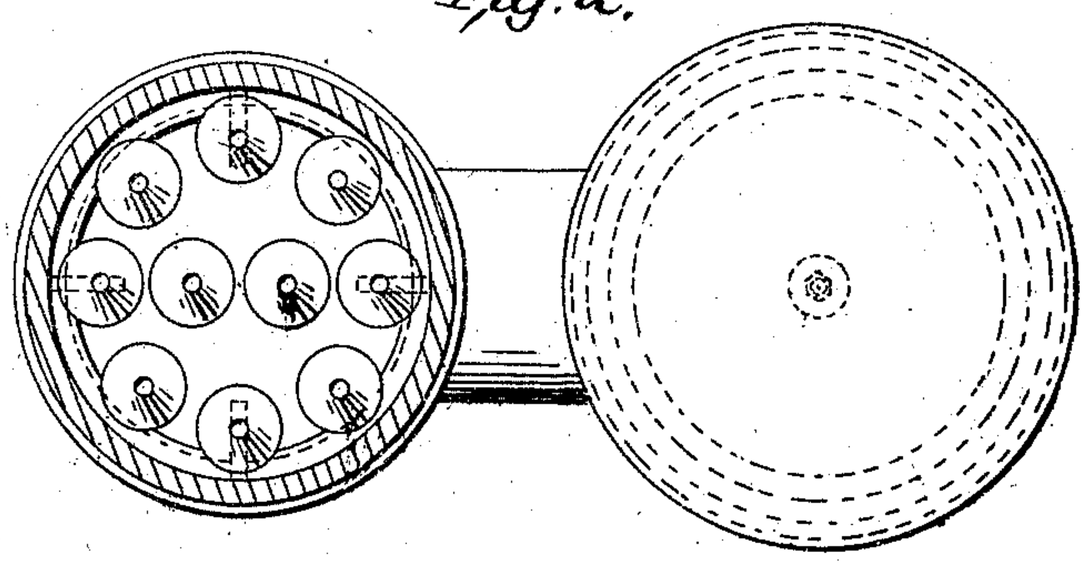


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 4.

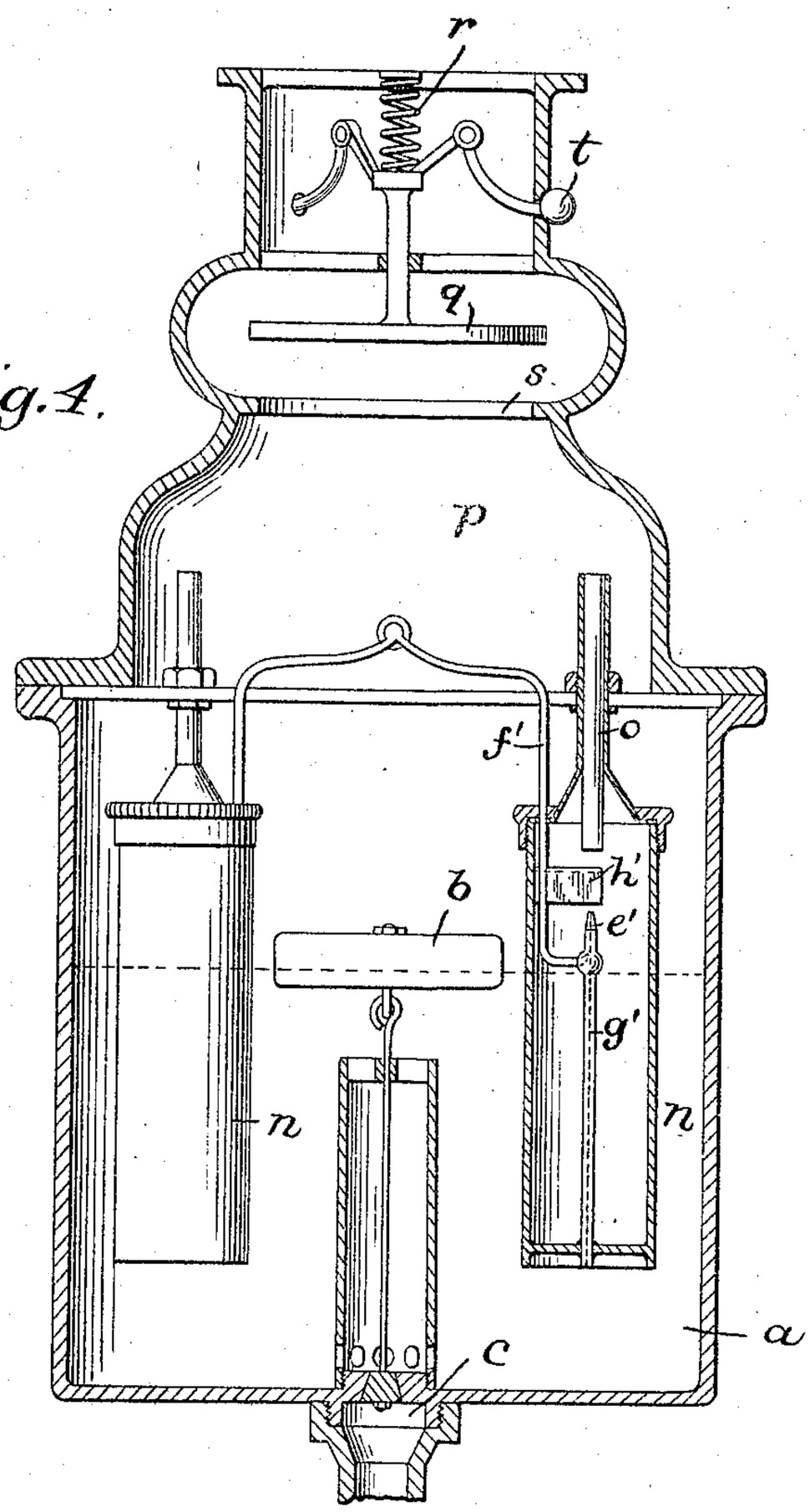
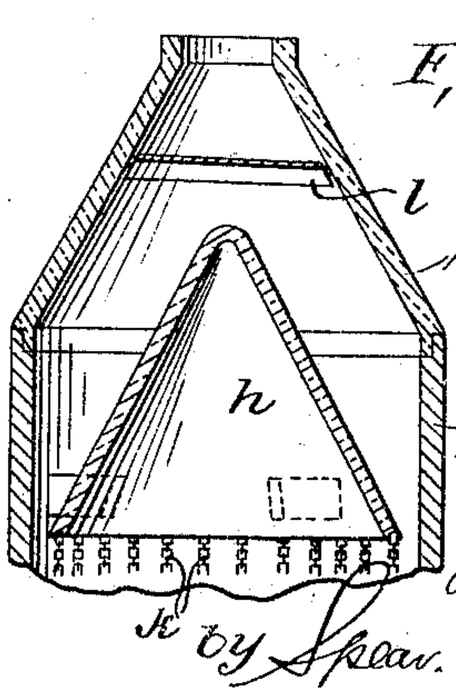


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CARBURETER.

985,256. Specification of Letters Patent. Patented Feb. 28, 1911.

Application filed February 12, 1910. Serial No. 543,640.

To all whom it may concern:

Be it known that I, JACOB H. FRIEDENWALD, citizen of the United States, residing at Baltimore, Maryland, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

My invention is designed to provide a device for use with an internal combustion engine, so as to secure a perfect vaporization of the liquid hydrocarbon fuel with the proper quantity of air, and I do this in a way so as to secure a dry vapor.

My device perfectly mixes the gasolene and air, thereby converting the liquid hydrocarbon into a gas or elastic vapor.

I secure great economy in fuel, and at the same time get the most perfect results by combining the gas and air in such form as to make it perfectly combustible, and thereby avoid the disagreeable odor common in the use of the ordinary vaporizer.

In the accompanying drawing: Figure 1 is a sectional view of a device having my invention applied; Fig. 2 is a plan view with a part removed; Fig. 3 is a detail of one of the vaporizers; and Fig. 4 is a sectional view of a modified form; Fig. 5 is a sectional detail view.

In these drawings, a float chamber which may be of ordinary construction is shown at *a*, the float being shown at *b*, and the valved inlet for gasolene at *c*. I provide in the chamber *d* a series of vaporizers, ten being shown in the plan view, though this number may be increased or diminished, according to requirements, as I do not limit myself to the number shown. By means of these vaporizers I secure a perfect mixture of the gasolene and air in the very best proportions for combustion and for economy of fuel. I prefer to utilize the construction of vaporizer shown in vertical section in Fig. 1, and in horizontal section in Fig. 3, which is a section on the line *a*—*a* of Fig. 1, although I do not limit myself to the detail shown. In this form of vaporizer I use a cap *e*, of conical shape, and into the chamber formed by this cap I direct air pressure from a suitable source through the pipe *f*, and the pressure of this air through the orifice of the conical cap *e* creates a suction on the vertically depending pipe *g* extending into the gasolene, and having an open end for the inflow of the gasolene, and as the oil is drawn up and passes out the open upper end of the pipe *g*, which is slightly below the opening in the cone *e*, it is vaporized and carried up with the jet of air into the cone *h* in the chamber *i*. The cone *h* overhangs and covers the several vaporizers of the series, it being understood that these are all alike, and that the description just given will apply to each one, and as the vapor of air and hydrocarbon passes upward into the cone *h*, it is thoroughly commingled, and as it passes down around the edge of the cone, it comes in contact with the links of the short chains *k* depending from the edge of the cone *h*, and is again broken up, and thence passes out through the throttle to the combustion chamber. In order to still further cause a commingling of the vapor, I may use a series of slats shown in Fig. 1 at *l*, which may be set at any inclination desired.

While I have described a positive pressure on the pipes *f* through the air pipe *m*, I wish it to be understood that I may utilize the draft from the engine instead of the forced draft to draw out the gasolene, and in this case I would simply make an opening in the top of the cone *h* so as to utilize the suction.

In Fig. 4 I utilize a series of cylinders *n*, and locate within each cylinder a gasolene pipe *g'* open at the bottom to the supply of gasolene, and utilize an air pipe *f'* which joins the gasolene pipe, as shown, a slight distance below its upper end, so that the air pressure is directed upwardly through the air pipe, drawing with it its proportion of gasolene. Above the pipe *e'* I use a deflector for breaking up the mixture, as at *h'*, after which the mixture passes out through the pipe *o* into the vapor chamber *p*.

The vapor chamber *p* I protect from back fire by the valve or disk *q*, which is normally opened by the spring *r*, but in case of back pressure, the force of the spring *r* is overcome, and the disk *q* is immediately forced against the seat *s*, closing the entrance to the vapor chamber *p*, and, at the same time, forcing open the balls *t*, which are supported upon the stem of the valve *q*, and opening passages for the discharge of the pressure and fire, and thus saving the vapor chamber from explosion.

I may not only use any number of spray devices that I find desirable, but I may provide for cutting one or more of them out in case I find this necessary.

While the suction caused by the piston moving in the cylinder is sufficient to draw in the charge, I prefer, as shown in the drawings, to utilize the air pressure, and thus lighten the work of the engine to this extent. With my invention it is not necessary to prime or flood the carbureter, and indeed it is not possible for the carbureter to flood for the reason that there is a positive fixed level for the gasolene, and the liquid fuel is drawn out to the point of vaporization by either the suction of the engine on the one hand or the air pressure through the conical nozzle on the other.

In order that the mingling of the vapor in the cone *h* may be observed I prefer to make this cone of glass and also make of glass the section *i'*.

What I claim is:—

1. In combination a suitable casing adapted to contain a liquid fuel supply, a series of pipes extending into said casing with their upper open ends extending above the oil level, a cone extending around the upper end of each liquid fuel pipe, an air supply pipe communicating with each cone, a mixing chamber above and common to all the cones, a cone concentrically arranged within said mixing chamber with its lower end extending over all of said plurality of cones, and a plurality of chains depending from the edge of said upper cone, substantially as described.

2. In combination a suitable casing adapted to contain a liquid fuel supply, a series of pipes extending into said casing with their upper open ends extending above the oil level, a cone extending around the upper end of each liquid fuel pipe, an air supply pipe communicating with each cone, a mixing chamber above and common to all the cones, a cone concentrically arranged within said mixing chamber with its lower end extending over all of said plurality of cones, and a plurality of chains depending from the edge of said upper cone, said mixing chamber having a conical upper end with its wall concentric with the wall of the said upper cone, and a plurality of inclined slats located in the contracted portion of the mixing chamber above the apex of the other cone, substantially as described.

In testimony whereof, I affix my signature in presence of two witnesses.

JACOB H. FRIEDENWALD.

Witnesses:

ETHEL KING,

F. L. MIDDLETON.