(No Model.)

W. C. STRONG.

CARBURETOR.

No. 302,442. Patented July 22, 1884.

Fig. 1.

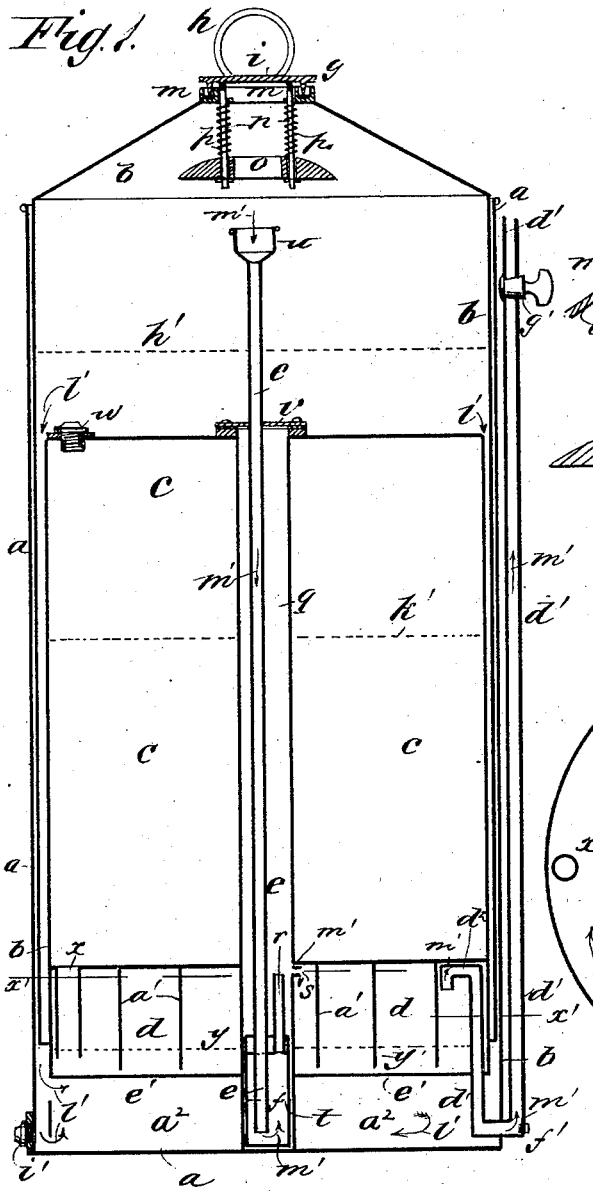


Fig. 3

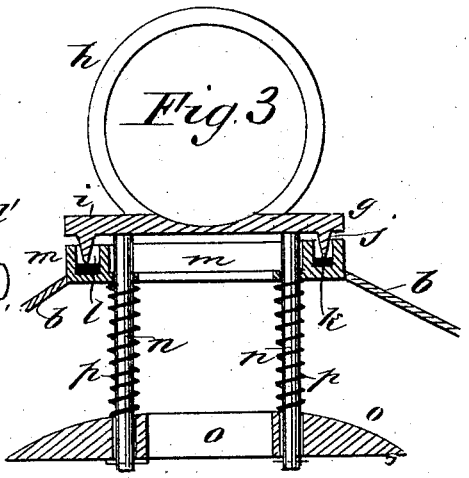
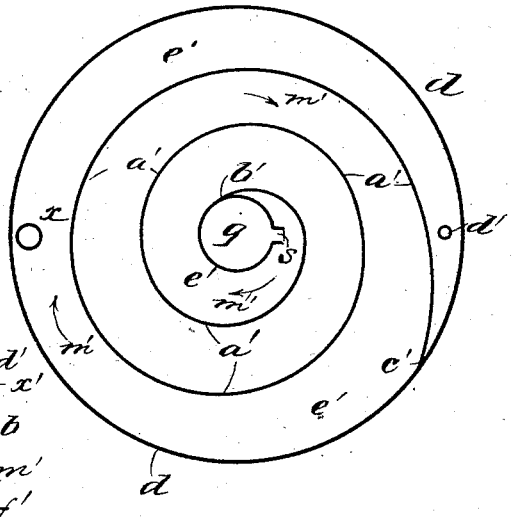


Fig. 2.



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WILLIAM CYRUS STRONG, OF READFIELD, MAINE.

CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 302,442, dated July 22, 1884.

Application filed July 25, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM CYRUS STRONG, of Readfield, in the county of Kennebec and State of Maine, have invented a new and Improved Carburetor, of which the following is a full, clear, and exact description.

The object of my invention is to provide a simple, cheap, and safe machine for the generation of gases from gasoline or other volatile liquids and air, the apparatus being specially adapted for furnishing heating-gases for jewelers, dentists, chemists, tinmen, and others requiring a constant or occasional heating-flame, as from a "Bunsen" or other burner, which may be connected with the apparatus, which is more especially intended to be of a portable character, but which may vary in size and capacity, as required.

The invention consists in a novel construction of the air-trap to the bell, to be opened self-actingly by the lifting of the bell; also, in a water-jacketed arrangement of the gasoline-vessel and carburetor in the main tank of the machine; and also in special contrivances for the inlet of air to the carburetor from the bell through a gas-trap.

The invention comprises, also, certain novel constructions and combinations of the parts of the apparatus, all as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical central sectional elevation of a gas-machine embodying my improvements. Fig. 2 is a sectional plan view of the carburetor on the line x' x', Fig. 1, with the gas-trap removed; and Fig. 3 is a vertical section of the air-trap of the bell on an enlarged scale.

The letter *a* represents a tank, open at the top to receive the open-bottomed bell *b*, which is fitted and guided in any approved way to slide within the tank *a* and outside of the gasoline receptacle or vessel *c* and carburetor *d*, which latter receives its air-supply through the stand-pipe *e* and trap *f* direct from the bell *b*, to which bell air is supplied at intervals, as required, through the air-trap *g*, which is arranged to open automatically by the lifting of the bell by the ring or other handle *h* of the air-trap. This trap *g* is constructed with a plate, *i*, preferably of circular form, and having a downwardly-projecting flange, *j*, which is seated upon a suitable packing, *k*, in the bottom of an annular recess, *l*, in a centrally-apertured cap-plate, *m*, fixed to the head of the bell *b*, the recess *l* above the packing *k* being preferably filled with a liquid—such as glycerine—in which flange *j* is centrally held, thereby making either a solid or liquid packing, or both, to effectually prevent the escape of air from the bell *b* through the trap *g*. The plate *i* of the trap, to which handle *h* is fixed, also carries one or more (preferably two) rigid rods or bars *n*, at the lower ends of which the apertured bell-lifting bar or plate *o* is suitably held, the rods *n* passing through lugs or a flange of the cap-plate *m* for a guide, and also carrying springs *p*, which act between plates *m* and *o*, to promptly seat the flange *j* on the packing *k* and close the air-trap when released. When the air-trap is opened by the weight of the bell *b*, said bell being lifted by the handle *h*, the springs *p* are compressed until plate *o* meets the head of the bell *b*, for lifting it without undue strain on the springs. The plate *o* may also serve as a weight for closing the trap *g*, and the springs *p* be dispensed with, if desired.

The letter *q* represents a tube which passes through the gasoline-vessel *c* and carburetor *d*, preferably through their center, as shown. This tube *q* extends to the bottom of tank *a*, to which it is fixed with any suitable air and water tight joint, thereby holding the vessel *c* and carburetor *d* in proper relative position with the tank *a* and sliding bell *b*, and affording space to receive the trap *f* into which the pipe *e* extends to near the bottom, and in which the air-outlet *r*, for supplying air to the carburetor through the opening *s* in the side of tube *q* is placed.

The trap *f* is filled with liquid to a sufficient distance above the open lower end of pipe *e*, or about to the dotted line *t*, to seal the pipe *e* and bell *b* against back-flow of gases from the carburetor, while permitting inflow of air to the carburetor by the compression of the air by the weight of the bell. The tube *e* has a funnel-shaped head or mouth, *u*, for freer supply of air to the tube, and for convenience in charging the trap *f* with the sealing-liquid. A

cap, *v*, for the tube *q* is fitted air and water tight to the gasoline-vessel *c*, and serves as a stay to laterally support and stiffen the tube *e*, which is or may be soldered into the cap. The gasoline-vessel *c* is charged with the volatile fluid through an opening closed by a plug, *w*, and discharges the fluid to the carburetor *d* through a pipe or tube, *x*, which opens from the bottom of vessel *c*, and extends down into the carburetor to a point corresponding to or a little below the desired level of the volatile fluid in the carburetor, which level is indicated by the dotted line *y* in Fig. 1.

I make the carburetor *d* in a manner to compel a circuitous route therein or therethrough of the air from the bell *b* and the volatilized products of the liquid fed from vessel *c*, a preferred construction being shown in the drawings, which represent, in Figs. 1 and 2, a spiral partition, *a'*, which is close-jointed at *b'* to the flue or tube *q*, and winds outwardly to the outer wall of the carburetor, to which it is close-jointed at *c'*, so that the air entering the carburetor at *s* from trap *f* will follow the course of the spiral partition to the outlet-pipe *d'*, meanwhile mingling intimately with the volatilized products from the gasoline or other suitable liquid fed from the vessel *c* through the tube or pipe *x*. The partition *a'* makes a close joint at the top with the head of the carburetor *d*, which head in this example also serves for the bottom of the gasoline-vessel *c*, while the lower edge of the partition *a'* is free from the bottom plate, *e'*, of the carburetor to afford a freer circulation of the volatile liquid within the carburetor, which is filled with any suitable fibrous substance in the usual or any approved manner.

The outlet-pipe *d'* for the generated gas is bent upon itself at the top, as at d^2, its mouth facing downward to avoid excessive inflow of the volatile liquid to the pipe should the machine be tipped sidewise or violently jarred in handling it; and any suitable drip-plug, *f'*, is fitted to the pipe *d'*, which has also a valve or stop-cock, *g'*, to control the discharge of gas from the machine to any connected pipe or burner for use, as required. This pipe *d'*, from its head d^2, passes downward through the carburetor and its bottom-plate *e'*, and through the water in the space a^2 of tank *a* below the carburetor, said pipe *d'* bending outward and passing through the wall of tank *a* near its bottom, and then upward or in any convenient direction to the point of discharge. Water is filled into the tank *a* up to about the line *h'*, Fig. 1, thus entirely surrounding the gasoline vessel *c*, carburetor *d*, and the lower bend of the gas-discharge pipe *d'*, thereby efficiently water-jacketing these parts containing the inflammable liquids and gases and making the machine safe against explosion. A plug, *i'*, in the tank *a* permits discharge of the water therefrom for a fresh supply, when desired.

The operation of my apparatus is as follows: The parts being in the positions of Fig. 1, and the bell *b* removed from the tank *a*, the gasoline or other volatile fluid is fed into the vessel *c* at *w* up to about the line *k'*, and the opening at *w* closed, the valve *g'* being previously closed. The gasoline descends into the carburetor *d* up to about the line *y*. The trap *f* is suitably charged with the sealing-fluid. The tank *a* is next charged with water, which freely circulates about the vessel *c* and carburetor *d*, as indicated by the arrows *l'*. The bell *b* is then placed in the tank *a*, and incloses a body of air, which is forced by the compression of the weight of the bell through the pipe *e*, trap *f*, and carburetor *d*, where it meets and mingles with the volatilized gasoline, the course of the air and mixed air and volatilized fluid being indicated by the arrows *m'*, and upon opening the valve *g'* the gas generated escapes from pipe *d'* to the burner. The bell *b* descends in the tank *a* by the outflow of the air therefrom to the carburetor, and when the bell has reached the limit of its downward movement it is raised by lifting on the handle *h*, which automatically opens air-trap *g* and admits a fresh supply of air to the bell, which is lifted to proper height and released, whereupon trap *g* closes air-tight self-actingly and the feed of air to the carburetor proceeds as before, the action of the machine being practically continuous as long as desired while the fluid supply in vessel *c* lasts.

The bell and tank may be fitted with any suitable stop devices to limit the up and down movements of the bell, which may also have an alarm attachment of any approved kind, for indicating its stop at the lowest point, that it may be promptly raised to maintain the air supply.

To stop the action of the machine, the bell may be lowered while the trap *g* is held open for free escape of air.

The cap *v* may be removed with trap *f*, for examination or repairs when required.

It is evident that the carburetor *d* may be made in various ways for a circuitous travel of the air and gases through it—as, for instance, a series of zigzag partitions may substitute the spiral partitions *a'*, and the pipes *e q* and trap *f* may be located at the side of the machine or otherwise away from its center; and the gasoline-vessel *c* and carburetor *d* may be arranged with a water-circulating space between them, if desired; and the details of construction may otherwise vary within the scope of my invention.

All the parts of my machine may readily be reached for adjustment and repairs, the construction in the first instance being inexpensive; and the product of the machine is a gas rich in caloric and well adapted for its intended uses.

I do not abandon or dedicate to the public any patentable feature set forth herein and not hereinafter claimed, but reserve the right to claim the same either in a reissue of any patent that may be granted upon this application or in other applications for Letters Patent that I may make.

I am aware that it is not broadly new to provide a gas-machine with an air-trap, arranged to open automatically by the lifting of the bell; also, that it is not new to provide the carburetor with a spirally-depending partition, and I do not desire to claim such, broadly, as of my invention.

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

1. The air-trap *g*, constructed with a handle, *h*, joint-plate *i*, rods *n*, plate *o*, and springs *p*, arranged on rods between said plates *i o*, in combination with the bell *b*, substantially as shown and described.

2. The air-trap *g*, constructed with a handle, *h*, joint-plate *i*, flanged at *j*, rods *n*, fixed to plate *i* and carrying the apertured lifting-plate *o* and springs *p*, in combination with the recessed collar *m*, adapted to receive the solid or liquid packing, or both packings, substantially as shown and described.

3. The combination, with the tank *a* and its bell *b*, of the gasoline-vessel *c* and carburetor *d*, connected by a pipe, *x*, the air and water tight shaft or tube *q*, passing through the gasoline-vessel and the carburetor, and the pipe *e* and liquid-sealed gas-trap *f*, through which the air passes from the bell to the carburetor, substantially as shown and described.

4. In a gas-machine, the following elements in combination: a water-tank, *a*, a bell, *b*, having an air-trap, *g*, at the top fitted to open self-actingly by the lifting of the bell, a gasoline vessel *c* and carburetor *d*, connected by a pipe, *x*, and water-jacketed in the tank *a*, and a central air flue or tube, *q*, carrying a stand-pipe, *e*, and trap *f*, said carburetor *d* having a depending spiral partition, *a'*, and a gas-outlet, *d'*, opposite the gasoline-inlet *x*, substantially as shown and described.

5. The carburetor *d*, connected by a pipe, *x*, with the gasoline-vessel *c*, and fitted with depending partitions, gas-outlet pipe *d'*, and an air-opening, *s*, with the pipe *e*, its trap *f*, and tube *r*, for admitting the air to the opening *s*, substantially as set forth.

WILLIAM CYRUS STRONG.

Witnesses:
FRANKLIN FISK,
WM. B. HERRICK.