

GEO. LOWDEN'S,

IMPT^S IN PORTABLE GAS APPARATUS.

No. 120,590. Patented Nov. 7, 1871.

FIG. 1.

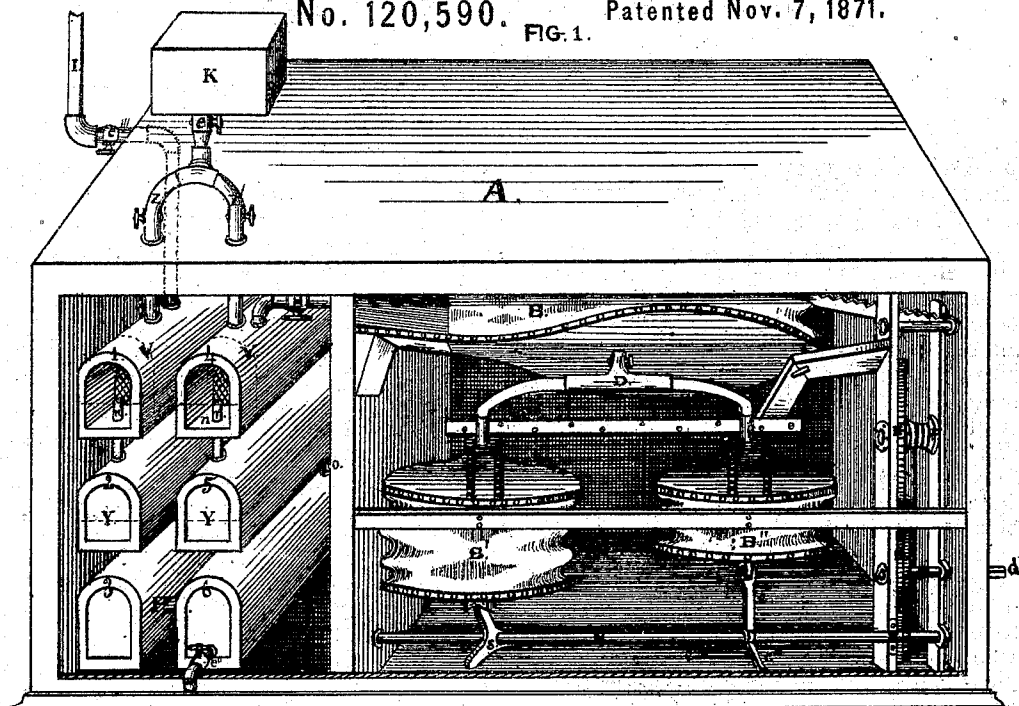


FIG. 1.

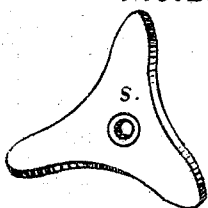
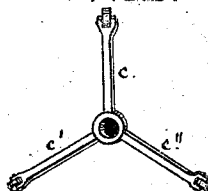


FIG. 3.



WITNESSES:
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UNITED STATES PATENT OFFICE.

GEORGE LOWDEN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN PORTABLE GAS-APPARATUS.

Specification forming part of Letters Patent No. 120,590, dated November 7, 1871.

To all whom it may concern:

Be it known that I, GEORGE LOWDEN, of the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful improvements in the construction and arrangement of Portable Gas Apparatus; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing, which is lettered to correspond with and form a part of the specification.

To enable the public to understand the nature of my said improvements, and in order that those who are skilled in the mechanic arts may be enabled to construct and operate the same, I will describe them as follows, to wit:

Figure 1 is a perspective drawing of the case A, having the front removed to show my improved mode of operating the same by the application and use of the star or triangular bearing S, arranged upon the horizontal shaft N and operating against the anti-friction roller X upon the under side or bottom of the bellows B'; or the bellows B' and B'' may be worked by three or more arms, *c c' c''*, arranged upon one hub, *h*, which is secured to a shaft, N, or other axis; and the said arms are furnished with anti-friction rollers at their ends to gradually strike against a flat spring plate or wooden pad, secured to the under side of the bellows B'' in such a manner that little or no shock is produced by the action thereof, while forcing the air up through the India-rubber pipe D into the distributing-bellows B, separately arranged at the top of the case A. The axis N is kept in a uniform motion by means of a weight, W, suspended over a windlass, F, by means of a wire-rope, R, which may be wound up by any suitable device, such as a crank, G. The atmospheric air is forced through the pipe H into the gas-generating tubes 1 2 3 4 5 6 from the upper bellows B, which is provided with a weight upon the top of the same. These gas-tubes are separately arranged, one above the other, in sets of one or more, and each tube is packed with either charcoal, pumice stone, asbestos, or other absorbing substance, that will hold by capillary attraction the inflammable mineral oil which is introduced into tube 1 through the ingress-pipe Z, and from thence is conveyed down into tube 2 through the pipe *n*, and from there the oil passes down into the bottom tube

3 through pipe * at the back end of this gas-tube. Tube 3 is connected with the second tier of gas-generating tubes by means of the transverse connecting-pipe P, which forms a communication between the two tiers or sets of gas-tubes which are arranged side by side inside of an ornamental or plain case A so as to represent a piece of furniture if thought best. This second independent tier 4 5 6 is supplied with gas-forming material, such as inflammable oil, through a separate supply or ingress-pipe, Z', by simply cutting off the horizontal connecting-pipe P from carbureter 3, and stopping up the supply-pipe Z, (with a stop-cock or plug;) then couple the pipe I to the pipe P and the supply of gas will pass direct to the burners from the carbureter 6; or, if the pipe I is connected to the front end of the carbureting-tube 4, the supply of gas to the burners may be thus taken from one carbureting-tube (4) only, without disarranging the other tiers of gas-tubes 1 2 3, which will be found very convenient while repairing, or for other purposes. The inflammable oil passes from the tank K down through the supply-pipe Z' into the top of the gas-tube 4, which communicates with tube 5 by the arrangement and use of the vertical pipe *r*; the liquid in gas-tube 5 is conducted down through the vertical pipe (at the back of the tubes) into the lower tube 6, where the surplus liquid, if any, may be drawn off through the waste-cock *u*. The vertical or upright connecting-pipes *n * r* extend up into the gas-tubes 1 2 4 5 about one-third the height of the interior thereof, in order to prevent any surplus liquor (not taken up by the charcoal or pumice-stone) from overflowing and stopping the pipes *n r*. These pipes are also protected from the charcoal or other mineral filling of the gas-tubes 1 2 4 5 6 by the use of a wire-gauze or perforated metal screen, V, inserted in each tube between the ends of the pipes *n* and *r* and the mineral filling of the gas-forming tubes, by which means I leave the upper ends of the vertical connecting-pipes *n * r* perfectly free from obstructions of any kind, as shown in the D-tubes 1 and 4, the front ends being open to more clearly illustrate the arrangement of the upper ends of the connecting-pipes *n r* and screens V V. These gas (tubular) chambers 1 2 3 4 5 and 6, or more, should not be filled to more than one-third of their capacity with any gas-forming liquid, so that the pumice-stone or other absorbent would take up

the same and hold it in a latent state ready for use without any accumulation of surplus liquid in the bottoms of the aforesaid gas-tubes or chambers 1 2, &c. The inflammable gas-forming oil is introduced into the top of the gas-tubes 1 or 4, or both, through the ingress-pipes Z and Z', which connect with the elevated oil-tank K by means of a short vertical pipe with stop-cock *e*. The lower end of this pipe is ground to fit into the cross-pipe *m*, which is secured to and forms a part of the pipes Z and Z', which are also provided with stop-cocks to regulate the flow of oil from the tanks K to the gas-tubes 1 and 4. The atmospheric air is forced (by loading the bellows B) through the horizontal pipe H into the tubular gas-chamber 4; from thence it is conveyed into the other series of tubes 1 2 3, &c.; by this means the required pressure upon the burners is produced through the egress-pipe I at the back end of tube 1 or the front end of tubes 4 or 6. This pipe is also provided with a cut-off cock, *e'''*, to regulate the flow of gas to the burners in proportion to the number of burners required for use.

Fig. 2 is a perspective drawing of a triangular plate or star-shape bearing, S, the points and curves of which are fashioned so as to gradually operate the bellows B without producing the shock that usually attends the different devices heretofore used for operating gas-bellows. The said triangular bearing S is secured to the shaft N, and revolves with the same when operated by the weight W which is suspended by a rope, R, over a windlass, F, Fig. 1.

Fig. 3 is a perspective view of the three arms *c c' c''*, which are arranged upon and project from one hub, *h*, in such a manner that the angles formed between the arms *c* and *c' c'* and *c'' c''* and *c* are equal to one hundred and twenty degrees each. All the arms are of the same length; consequently the end rollers traverse in the same arc, and as one leaves (the spring plate or pad upon the under side of the bellows B'') the other arm receives it, and thus prevents the shock and produces a more even uniform movement of the bellows than could be produced by either of the devices that are in common use and set forth in patents Nos. 23,084, 65,594, and 65,595; all of which I respectfully disclaim as a part of this application.

I also disclaim the bellows B' B'' and B for forcing air into bags, in combination with carbu-

reting apparatus, or the combination of both with carbureters and purifiers. Neither do I claim coiled partitions, or coiled pipes of any kind, filled with sponge or an equivalent material for forming "lower carbureters," in combination with purifiers, and the combination of purifying and carbureting-chambers. Neither do I claim pipes for conveying the surplus oil from the carbureting-chambers, nor the combination of the bellows B with air-bags, passage-pipes, coiled partitions, pipes, and cocks, arranged, combined, and operating substantially as set forth and claimed in W. Thompson's patent, numbered 84,021. Finally, I disclaim the use of a horizontal shaft passing through the center of a transverse bar, so that the ends of the bar will operate the bellows when the shaft revolves by means of flat wound springs, band-wheels, and other parts of clock-gearing.

But the novelty of my improvements consists in the mechanical manner of arranging three bellows inside of an ornamental or plain case A, similar to a book-case or other furniture, and operating the said bellows by either of the devices set forth and shown at Figs. 2 and 3, whether the same are arranged upon a horizontal shaft, N, or operated by separate gearing, by means of the weight W, or otherwise, to give the uniform easy motion to the bellows B' B''. And the separate arrangement of the tiers of carbureters or gas-tubes, so that they may be used separately or combined, and the manner of arranging the interior of the D-tubes to protect vertical connecting-pipes *n n' r* $\overline{\text{r}}$, together with the mode of supplying the same with the inflammable oil, all combined and operating inside of the case A, I believe to be new and useful to the public; therefore,

What I claim as my improvements, and desire to protect by Letters Patent of the United States, is—

The mechanical arrangement of the carbureting-tubes 1, 2, 3, 4, 5, and 6 in separate tiers, so that they may be used separately or combined with each other, in combination with the other working parts of the apparatus, all inside of the case A, or otherwise.

In testimony whereof I hereunto subscribe my name in the presence of two witnesses.

GEORGE LOWDEN.

Witnesses:

JAMES P. McLEAN,

ANNE S. McLEAN.

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