

A. I. Bell,

Carburetor.

No. 112,111.

Patented Feb. 28. 1874.

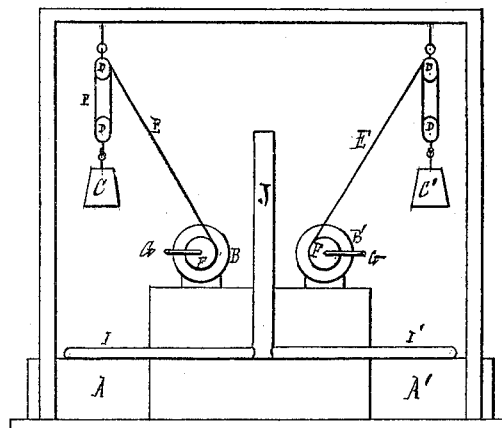


Fig. 1

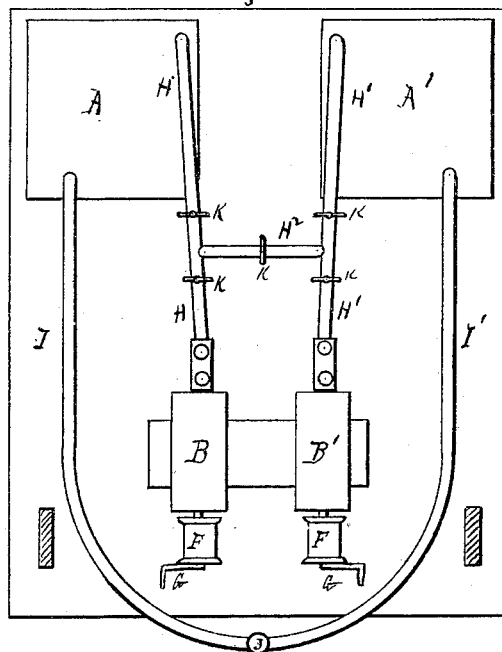


Fig. 2

Witnesses

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ALEXANDER DALRYMPLE BELL, OF SAN FRANCISCO, CALIFORNIA.*

Letters Patent No. 112,111, dated February 28, 1871.

IMPROVEMENT IN APPARATUS FOR CARBURETING AIR.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, ALEXANDER DALRYMPLE BELL, of San Francisco, in the county of San Francisco and in the State of California, have invented an Improvement in the Manufacture of Pneumatic-Gas; of which the following is a specification, reference being had to the accompanying drawing.

In the production of pneumatic-gas if the carbureters are too large, the air in its passage through them becomes overcharged with the hydrocarbon vapors, and to avoid this result it is found necessary to reduce the size of the carbureters until another difficulty is encountered in the refrigeration of the hydrocarbon liquid caused by its rapid evaporation.

The first object of my invention is to obviate this last difficulty. When the air-pump or apparatus for forcing the air through the carbureters is driven by weights, springs, or clock-work, very perfect workmanship and consequently expensive machinery is required to secure a uniform pressure of gas, because of the irregular friction of the parts.

The second part of my invention is to provide a method by which a uniform pressure may be always maintained; and

My invention consists in combining two sets of apparatus for generating pneumatic-gas into one machine, in such a manner that when refrigeration takes place in one carbureter or set of carbureters the other or other set will begin its action and allow the first to regain a suitable temperature by the absorption of heat from its surroundings, and in such a manner that when weights, springs, or clock-work is employed for driving the air-pump, a uniform pressure of gas is maintained, as hereinafter more fully described.

In the accompanying drawing—

Figure 1 is an elevation of an apparatus for the manufacture of pneumatic-gas embodying my improvement.

Figure 2 is a plan of the same with certain parts removed.

Each part is distinguished by the same letter whenever it appears in the drawing.

A and A' are the carbureters.

B and B' are rotary air-pumps or machines for forcing the air through the carbureters.

The motive power is derived from weights C and C', and is communicated to the machines B and B' by means of the blocks D, cords E, and reels F. The weights may be wound up by means of cranks G. The air is conveyed to the carbureters by means of the pipes H, H¹, and H², where it absorbs the vapors of gasoline or other hydrocarbon liquid, and becomes converted into pneumatic-gas, and from the carbureters it passes through the pipes I and I' to the delivery

pipe J. It will be seen that this apparatus consists of two complete pneumatic-gas machines united together by means of the cross-pipe H², and discharging through one and the same delivery pipe.

The interior construction of the carbureters is not shown, because my invention is applicable to any kind of carbureter used in the manufacture of pneumatic-gas. And my invention is equally applicable to any kind of air-pump that may be employed. The air-pumps shown in the drawing are of that class, the speed of which is regulated by the pressure of the compressed air or gas contained in the carbureter and pipes, and the stopping and starting of which are effected by the increase or diminution of said pressure. By means of the five-stop cocks K, either or both air-pumps may be caused to force air through either or both carbureters or either carbureter, or either air-pump may be disconnected for repairs.

In the apparatus represented in the drawing, if all escape of gas from the delivery pipe is prevented by shutting the cocks of the burners, the weights will descend until the pressure of the gas becomes sufficient to balance them; if one or more of the cocks of the burners be then opened the heavier weight only will descend, if one is heavier than the other and the gas will only be generated in the carbureter through which that weight forces the air; but if any thing should impede or interfere to check the descent of the heavier weight, the lighter weight would immediately begin to move and the gas would be supplied from the other carbureter; if the weights are equal, that one will move first that has the least friction of rope and sheave to overcome, and will continue to move until something impedes or retards it, and thereby allows the pressure of gas to decrease sufficiently to start the second weight. To maintain a uniform pressure of gas the weights should be made as nearly equal as possible, and may be regulated or adjusted by additional weights after the machines are in operation, and to provide against refrigeration an extra weight or weights may be provided, that may be added to either side, as required, in order to allow the carbureter in which the refrigeration takes place to recover its proper temperature. Of course stops or impediments can be so arranged at suitable heights or distances as to cause an alternate operation of the weights to take place automatically.

It has been found by actual trial that with a carbureter of the proper size in proportion to the number of lights, refrigeration to an injurious extent takes place in about four hours; therefore, if the weights in fig. 1, occupy each four hours in descending to the floor, and of them is made heavier than the other, the heavy one will supply the gas for the first four hours

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and until refrigeration takes place; but as soon as it touches the floor the light weight will begin to descend and produce the gas from the other carbureter for the next four hours; or a single air-pump may be used and its air directed alternately through the carbureters, changing from one to the other every four hours, when the object is simply to prevent refrigeration. When a fan or other continuously blowing-machine is used for forcing the gas into a reservoir or holder, as in large works for supplying a town or city, my invention is also applicable, for it is evident that by having two sets of carbureters, the blast can be shut off from one and be directed through the other when refrigeration has taken place. It is quite evident that my invention is also applicable when the air-pump is driven by springs and clock-work or other motive power instead of by weights.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for the manufacture of pneumatic-gas the combination of two carbureters or two sets of carbureters acting alternately, in a manner substantially as described, and for the purpose of preventing excessive refrigeration, substantially as described.

2. In an apparatus for the manufacture of pneumatic-gas, the combination of the air-pumps B and B', arranged to operate in a manner substantially as described, and for the purposes set forth.

3. The combination, in one machine, of two complete sets of apparatus for generating pneumatic-gas, in a manner substantially as hereinbefore described, and for the purposes hereinbefore set forth.

In testimony whereof I have herewith set my hand this 2d day of December, A. D. 1870.

ALEXANDER DALRYMPLE BELL.

Witnesses:

J. E. PURDY,

WM. B. ISAACS.