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C. A. STEVENS.

Improvement in Gas Generators.

No. 122,499. Patented Jan. 2, 1872.

Fig. 1

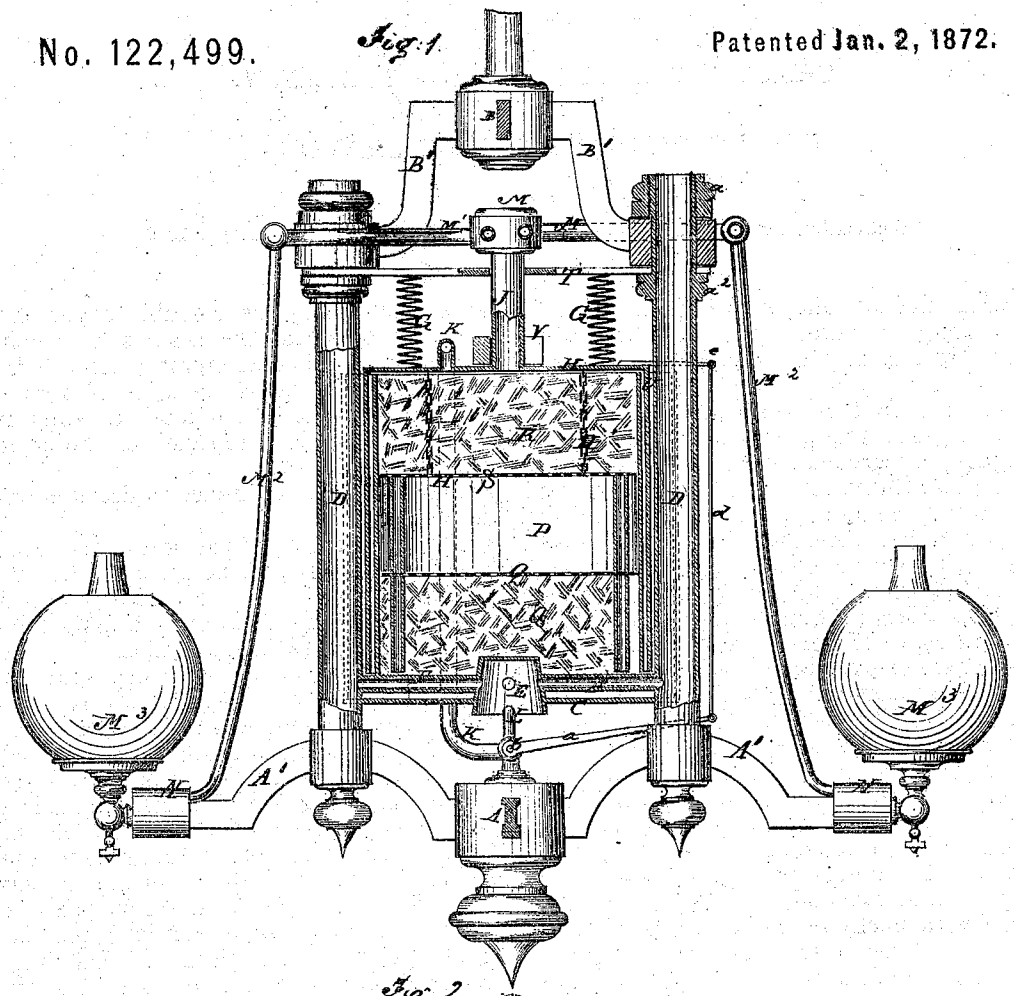
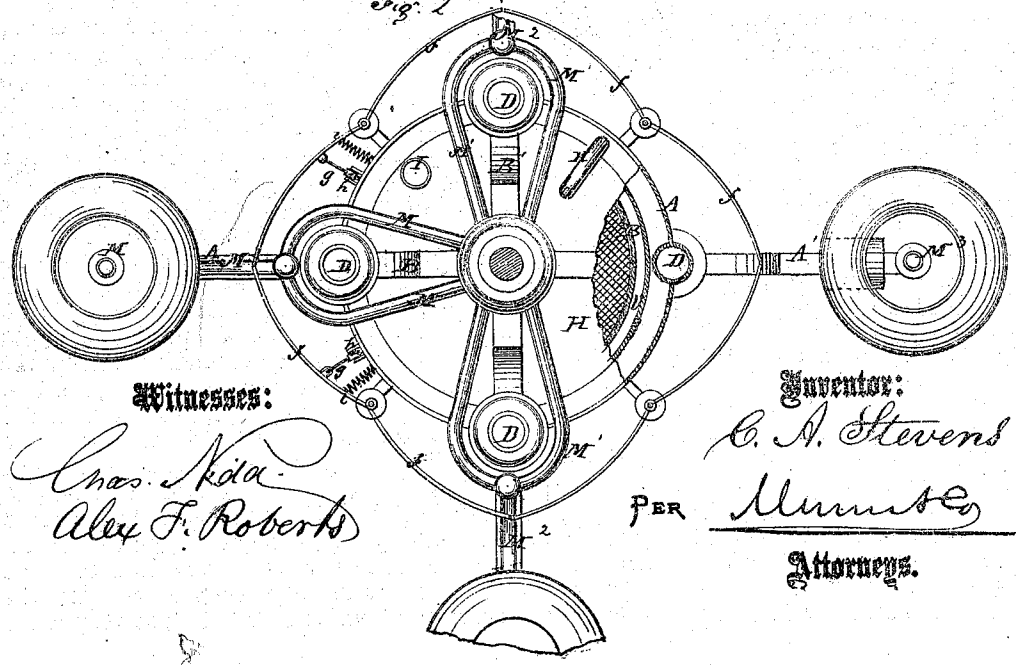


Fig. 2



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UNITED STATES PATENT OFFICE.

CHASE A. STEVENS, OF NEW YORK, N. Y.

IMPROVEMENT IN GAS-GENERATORS.

Specification forming part of Letters Patent No. 122,499, dated January 2, 1872.

Specification describing a new and Improved Gas-Generator, invented by CHASE A. STEVENS, of New York city, in the county and State of New York.

This invention relates to improvements in apparatus for generating gas from gasoline and other light hydrocarbon oils for supplying chandeliers and other burners by generating only when burning, the said apparatus being adapted to be attached directly to the chandelier or other burner, or be otherwise suspended in the room. It consists of a novel arrangement of asbestus safety-packing with the generating apparatus, to render the machine non-explosive in case of overturning and other accidents. It also consists of a combination of asbestus flock with the generator to facilitate the vaporization, the said flock being prepared by picking, dressing, &c., and by chemical treatment, or by either method alone, to a high degree of fineness, and wholly relieved of silex or other gritty matter, greatly favoring the vaporizing. The invention also consists of a packing of plumbago and oil or glycerine, or the same with flocky plumbago for the well in which the cover of the gas-holder works; the object of which is to have packing that will not readily flow out in case of the overturning of the machine, and which will maintain a uniform temperature within the machine. The invention also consists of a construction of the stationary case and hollow flues, which also serve for posts, in some cases, for the escape of the product of combustion of the heat used for generating the gas; also lateral flues connecting the combustion-chamber with the vertical flues all in one piece, the same being done by casting, the arrangement being such that the escaping heat of the product of combustion will be mainly imparted to the generator; and the invention also consists in the attachment of the instrument to the chandelier by the extensions of the hollow flues or posts above and below the holder, and an arrangement therewith of springs to retain the movable part of the holder in such manner as to allow it to rise with the accumulation of gas, but so that it cannot be thrown off in case the machine is upset, so as to allow any such volume of gas to escape as will explode. The invention also consists in certain automatic apparatus actuated by the movable cover and springs, for regulating the heat used for generating the gas, all as hereinafter described.

Figure 1 is a sectional elevation of my improved machine and a chandelier to which it is affixed. Fig. 2 is a top view of the same with a part sectioned.

Similar letters of reference indicate corresponding parts.

A is the outer part of the stationary case; B, the inner part; C, the bottom; D, the vertical flues or posts; E, the combustion-chamber; and F, the lateral flues connecting the combustion-chamber with flues D; all of which are to be made in one piece, by casting, for the purpose of cheapening the cost, the said vertical flues being extended as much below the bottom as the combustion-chamber is required to be elevated above the top, or as is necessary for connecting to the arms A′ of the chandelier; and they are extended above the top, as shown, for supporting the actuating springs G for the cover H; also for connecting to the upper part B′ of the chandelier. The connection with said arms is formed by the extensions passing through holes formed in them and fastening-nuts a^1 and collars a^2, or like means. The cover H will be of sheet metal or cast, as preferred, and it will have a hole, I, with a plug or stopper for supplying the oil from time to time, a flexible pipe, K, for conducting the gas to the burner L, a vertical pipe, J, leading to a distributer, M, from which the gas will be conducted, by branches M^1 and flexible pipes M^2, to the burners M^3, the flexible pipes being employed to allow the cover to rise and fall. N represents chambers containing flocky asbestus packing, through which the gas is conducted to the burners, which chambers are placed near to the burners, and are used to prevent any possibility of flame extending back to the gas-holder; also to check any undue pressure, and also to filter the gas. I propose to fill the holder B—say about two-thirds full—with asbestus flock O, heated chemically to remove all the silex and other foreign matters, and then picked, carded, &c., so as to be rendered fine and flocky; or so prepared, by either chemical or mechanical means alone, to absorb the oil and hold it in suspension to facilitate the vaporization, which I find it does very much

better than when in the crude state, as I am aware it has been used before; and above this flock O I provide a vacant space, P, as a reservoir for the gas generated, either having a perforated disk, Q, above the flock or not, and at the upper part of the holder, below cover H, I arrange another packing, R, of the prepared flock, supporting it on a perforated disk, S, or other equivalent device, the mass being about as thick as the distance the cover is to rise, or a little more, and being so connected to the cover or otherwise arranged that it will rise with it—say, by means of chains H′—so that there will be no vacant space between the packing and the top of said cover, as there would be if the latter should rise alone, in which case the gas would accumulate in sufficient amount to explode if fire should reach it through the top by any accident; or if the machine should be overturned the gas cannot escape from chamber P over the top of B and through the packing R in sufficient amount to explode. This asbestus fiber, which I use both for this packing and in the bottom at O, is distinguished from all mineral fiber heretofore used in carbureting or generating apparatus in being prepared, as before stated, so as to be reduced to a fine flocky condition, wholly relieved of the gritty matters, which renders it far superior both as an absorbent and for packing. As a further means of safety from explosion in case of the overturning of the machine, I propose to pack the well or space V between the parts A and B of the stationary parts of the holder with plumbago alone, or plumbago and asbestus mixed with oil, glycerine, water, or other substance in sufficient quantity to not obstruct the rising and falling of the cover, the object being to have a fire-proof packing that will not flow out quickly and let the gas escape. It is also valuable for maintaining a uniform temperature in the generator owing to the low conducting power of these substances. Only a small proportion of fluid is necessary to make this packing thin and pasty enough for the cover to work freely, for both the plumbago and asbestus have natural lubricating qualities which render them valuable for such packing. I propose to employ springs G above the cover H, as shown, both to keep it in place in case of overturning and to cause the necessary pressure of gas, said springs being attached to cross-bars T supported above the cover by the vertical extensions of the posts, as shown. The machines being in general quite small for supplying only a few burners, the covers will not have sufficient weight to give the necessary pressure, which makes it necessary to use some means to increase it, and it is sometimes desirable to vary the pressure. I therefore employ the springs, as shown, and will employ any suitable means for varying their tension when required to vary the pressure; but I may use weights V, if preferred; and, in case of using them, will prefer to so arrange them around the pipe J that they may be taken off and put on as it may be required to vary the pressure. In order to regulate the generation of the gas according to the consumption I provide a lever, *a*, to the cock *b* which admits gas to the generating-burner L and connect said lever with the cover H by rods *d e*, &c., all being so arranged that when the cover rises above the medium position the cock will be turned and the flame lessened, and when the cover goes down the cock will be opened again. As the action of the heat-rays from the burners M^3 upon the sides of the generator will have considerable effect also upon the generating power I propose to regulate this automatically also, using therefor doors *f* or hinged screens to be closed and shut off the heat when the gas accumulates and the cover rises by said cover H, to which said doors are connected by cords *g*, which pass under guide-rollers *h* up to said cover for the purpose, and the said doors will be opened when the cover falls by springs *i*, of any kind, suitably arranged therefor. These screens are preferably arranged in pairs, as shown, to open in front of the burners; but they may be arranged in any approved way.

I do not limit myself to the use of this generator in connection with chandeliers, as here shown, but propose to use it separately for supplying any system of burners.

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

1. The combination, with the oil-chamber of an oil-vaporizing apparatus, of a filling of prepared flock, Q, of asbestus or other mineral fiber, substantially as specified.

2. The combination, with a gas-generator and holder A B H, of a packing of plumbago and water or other liquid, or the same with asbestus flock, all substantially as specified.

3. The exterior case A, interior B, bottom C, flues F D, and combustion-chamber E, all constructed in one piece, substantially as specified.

4. The flues D extended above and below the vessel A for connection to the chandelier and for other purposes, all substantially as specified.

5. The combination of the cross-bars T, vertical flues D, and spring G, all substantially as specified.

6. The combination, with the generators, of the heat-regulating screens *f*, said screens being automatically actuated by springs, and the cover H and connecting mechanism, all substantially as specified.

The above specification of my invention signed by me this 7th day of November, 1871.

CHASE A. STEVENS.

Witnesses:
T. B. MOSHER.
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