

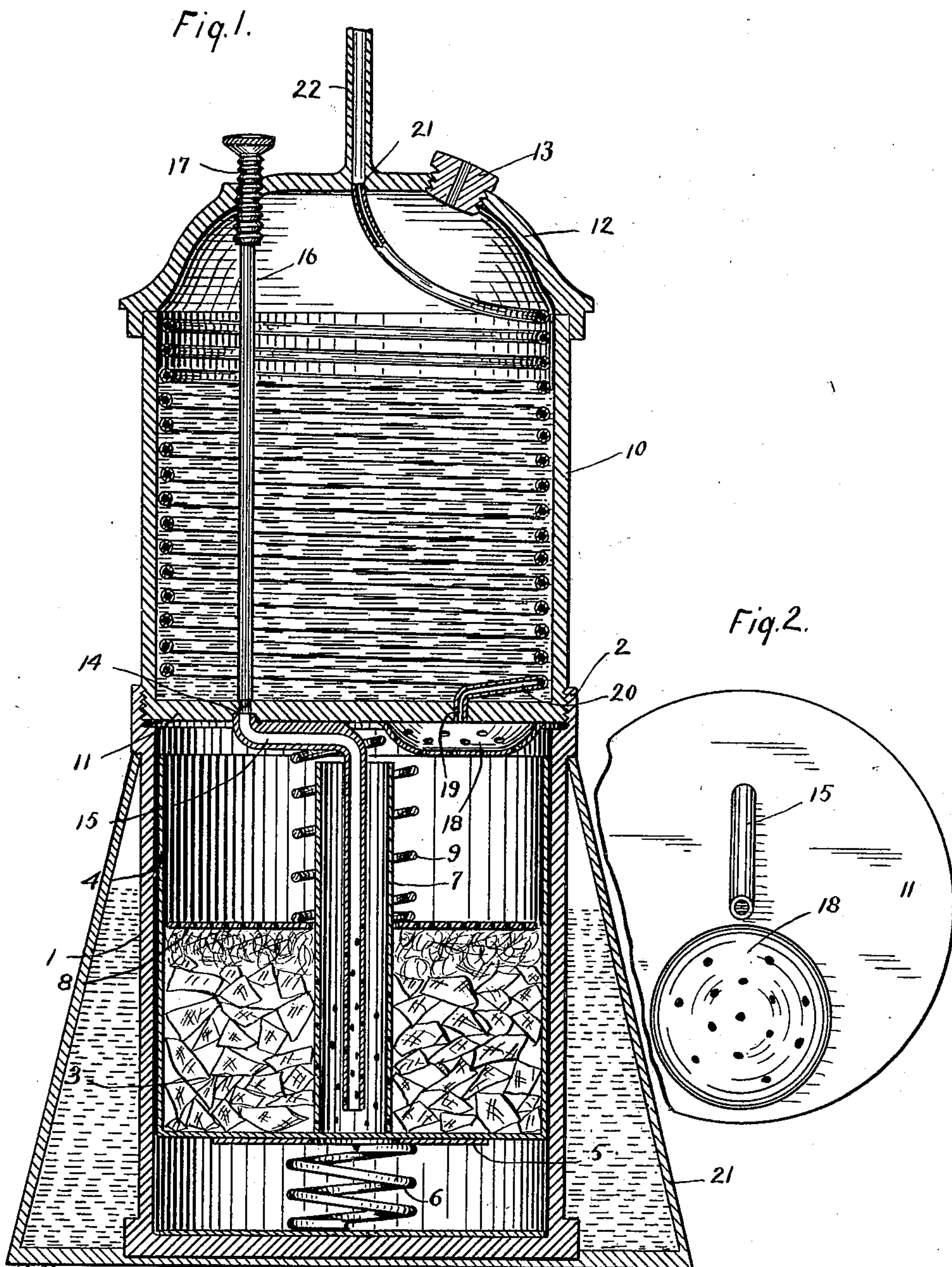
No. 635,599.

Patented Oct. 24, 1899.

I. O. RUSSELL.
ACETYLENE GAS GENERATOR.

(Application filed Feb. 25, 1899.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 635,599, dated October 24, 1899.

Application filed February 25, 1899. Serial No. 706,874. (No model.)

To all whom it may concern:

Be it known that I, ISAAC O. RUSSELL, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Acetylene-Gas Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like letters refer to like parts.

10 My invention relates to a novel arrangement and construction of an acetylene-gas lamp or apparatus, as will hereinafter appear.

One feature consists in passing the gas after its generation through a water-tank by means of a coiled tube or otherwise to the outlet or burner, combined with an automatically-adjustable gas-chamber for holding the gas before it passes through the coiled tube, whereby the capacity of the gas-chamber will vary according to the volume of gas therein, and thus maintain the gas while in such chamber under substantially uniform pressure. The result of this feature is a uniform flow of gas to the burner or outlet and a thorough mixing of the particles of gas, so as to give the highest efficiency.

The full nature of this invention will appear from the accompanying drawings and the description and claim following.

30 In the drawings, Figure 1 is a central vertical section of an acetylene-gas lamp embodying my invention. Fig. 2 is a bottom view of the water-tank, being partly broken away at one side.

35 In detail 1 is a cylinder-casing closed at the bottom and open at the top. At its upper end it is provided with internal threads 2. It contains a depressible cup-shaped casing 4, with the bottom 5 thereof supported upon the spiral spring 6, that in turn rests upon the bottom of the casing 1. The inner casing fits air-tight within the casing 1, and the length vertically of the inner casing 4 is enough less than the length of the casing 1 to permit the insertion of the spring 6 and the vertical play and movement of the inner casing 4 for the purposes hereinafter mentioned. The inner casing 4 contains carbid 3, surrounding a centrally upwardly extending tube 7, that is perforated in the lower half thereof. The lumps of carbid are held in close contact with each

other by a loose depressible ring or plate 8, that is perforated for the escape of the gas. It is depressed by the spiral spring 9.

The space above the plate or ring 8 forms 55 a gas-chamber, where the gas collects after its generation and escape through said plate. Above the gas-chamber I secure the water-chamber, which consists of the cylindrical casing 10, provided at its lower end with external threads to engage the internal threads 2 at the upper end of the lower casing 1, whereby the two casings are secured together. The joint should be air-tight. The casing 10 has a bottom 11 and a top 12. Water is supplied 65 through a threaded opening in the top closed by the screw-cap 13. The bottom has an opening at 14 for the escape of the water from said chamber into the pipe 15, that is rigidly secured to said bottom and so arranged as to extend centrally downward therefrom within the tube 7 almost to the bottom 5 of the gas-generating chamber. The lower portion of the tube 15 is perforated. The water passes through said tube into the tube 7 and from 75 it through its perforations into the chamber containing the carbid. A valve 16 for closing the opening 14 from the water-chamber consists of a pin or rod with a threaded head 17 at its upper end, which extends through a 80 threaded opening in the top of the water-chamber. The gas that collects in the chamber above the ring or plate 8 passes through a perforated shield 18 and through the opening 19 in the bottom 11 of the water-chamber 85 into the coiled tube 20, that is coiled against the casing 10, and issues at its upper end through the opening 21 into the outlet-tube 22, that leads to the burner. In the form of lamp which I have used and adopted for 90 house-illuminating purposes the casing is about three-inches in diameter and the tube 20, coiled within the upper casing 10, is about twelve feet long.

Since the water-chamber contains water 95 through which the coiled tube 20 extends from bottom to top, it is obvious that the gas would become cooled before it reaches the burner, and also that its particles while passing through said long tube will be thoroughly 100 mixed and commingled, and, furthermore, the pressure or movement of the gas while

passing through so long a tube will become regulated and uniform, so that it will pass to the burner under a uniform pressure. The uniformity of pressure and movement of the gas is also partially caused by the automatically-distensible gas-chamber above the ring or plate 8. It is obvious that when the gas in said chamber attains a high pressure it will press said plate, the casing 4, and the bottom 5 downward as far as the tension of the spring will permit. When the movement of gas in said chamber diminishes and as it diminishes, the spring 6 will force the casing 4 and the carbid upward, thus diminishing the capacity of the gas-chamber. In this way the pressure of the gas in said chamber will be much more uniform than if such arrangement were not employed. It will pass into the coiled tube 20 under such pressure, and greater uniformity will be established before it escapes from said tube for the reason before mentioned. The spring 9, with its upper end resting against the bottom 11 of the water-chamber and its lower end resting upon the plate or ring 8, will keep said plate or ring down in position. By this construction, therefore, it is seen that I have a very compact conveniently - arranged lamp adapted for house, headlight, or other purposes. I have the water-tank between the gas-cham-

ber and the gas-generating chamber, which are usually hot while gas is being generated, and the burner or blaze. It also cools the gas before it reaches the burner and feeds the same to the burner at a uniform rate, so as to maintain a bright flame of uniform size.

In order to keep the generating-chamber cool, I provide about it a water-jacket 21. This is shrunk on and is conical in form, the lower end being widened to form a broad base for the lamp.

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

An acetylene-gas lamp including a casing a carbid-receptacle supported by a spring airtight within the casing, a plate loosely placed on the carbid, a spring acting on said plate whereby the gas accumulating above said plate will force the carbid-receptacle downward to enlarge the capacity of the gas-chamber, and a coiled tube leading from the gas-chamber to the burner or outlet.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

ISAAC O. RUSSELL.

Witnesses:

V. H. LOCKWOOD,
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