

No. 785,853.

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L. S. BUFFINGTON.
ACETYLENE GAS GENERATOR.

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Fig. 1.

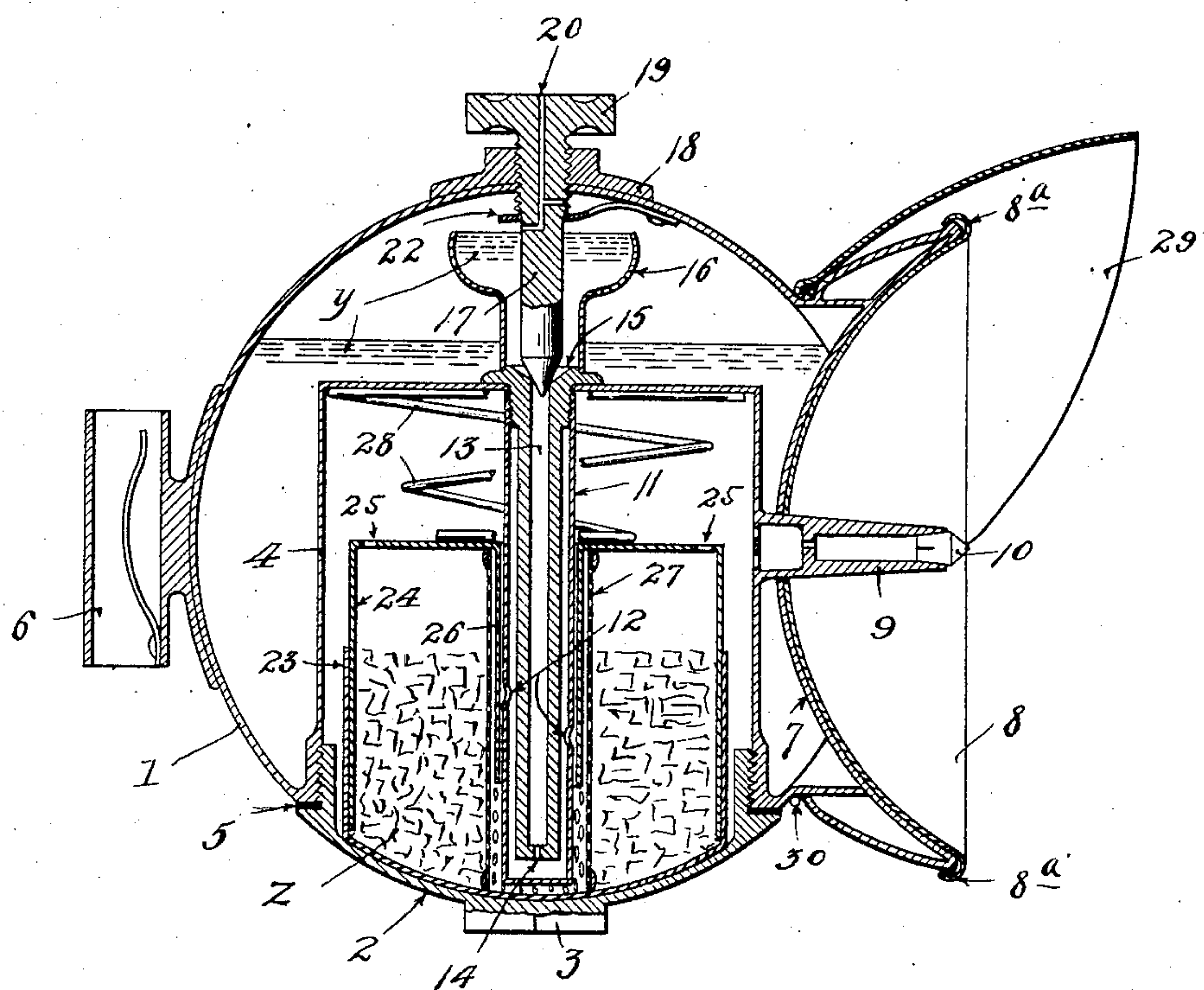
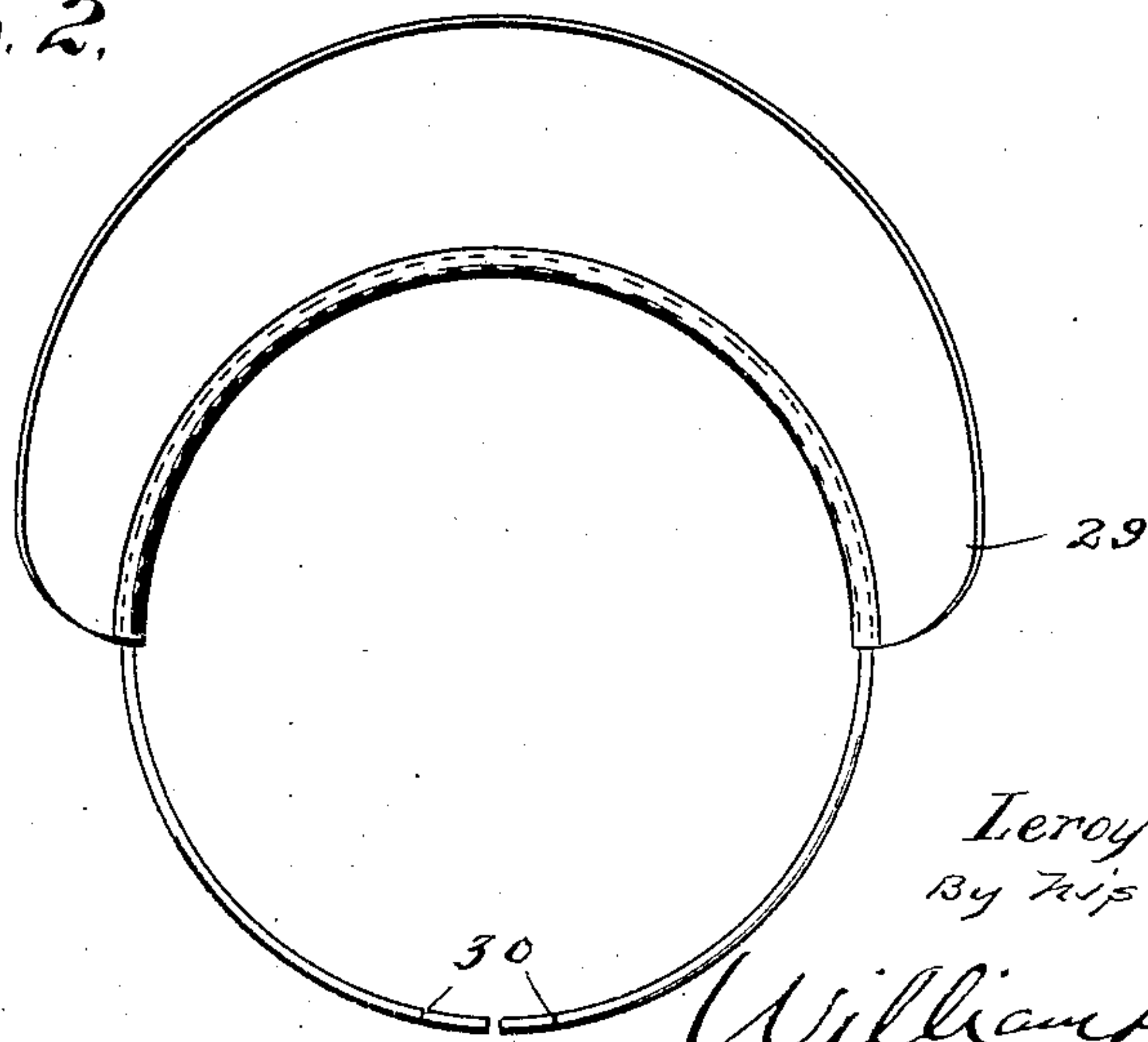


Fig. 2.



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UNITED STATES PATENT OFFICE.

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ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 785,853, dated March 28, 1905.

Application filed February 6, 1904. Serial No. 192,345.

To all whom it may concern:

Be it known that I, LEROY S. BUFFINGTON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to acetylene-gas generators, and especially to combined generators and burners, such as bicycle and automobile lamps, and has for its objects to improve the same in the several particulars hereinafter noted.

To the above ends the invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

In the present illustration the invention is shown as incorporated in a lamp designed for use as a bicycle-lamp, but capable of use generally wherever a portable lamp of that character is desired.

In the drawings like characters indicate like parts throughout both views.

Figure 1 is a vertical section taken centrally through the lamp; and Fig. 2 is a detail in front elevation, showing the so-called "reflector-hood" removed from working position.

The lamp illustrated in the drawings has a spherical body, a concave reflector, and a gas-burner or nipple which projects horizontally at the axis of the reflector.

The spherical body 1 of the lamp is provided at its bottom with a removable section 2, the outer surface of which follows the lines of the spherical body 1 and is in the form of a large cap-nut, having a depending hub portion 3, to which a wrench may be applied. The upward and inwardly projecting flange of the bottom section 2 has screw-threaded engagement with the base of an inverted cylindrical cup-like generating-chamber 4, that projects vertically within the spherical body

1 and is united therewith at its lower end, so that the said bottom section 2 closes the lower end of said generating-chamber, a gasket 5 being placed between the said parts to form a gas-tight joint. At its back the spherical body or case 1 is provided with a sleeve-like head 6, which adapts it to be detachably secured to a suitable supporting projection or bracket. At its front face case 1 is provided with a concave reflector-back 7, the concave surface of which is covered by a detachable concave reflector 8. At its marginal edge the reflector 8 is turned over or rolled at 8^a to adapt it to be sprung over the outer edge of the reflector-back 7, so as to detachably hold the said reflector to the said back. A tubular burner-nipple 9 leads outward from the generating-chamber 4 and projects axially through the reflector-back 7 and the reflector 8. At the outer end of the nipple 9 is an ordinary or any suitable burner-tip 10.

The water-distributing tube 11 depends axially downward from the top or head of the generating-chamber 4 and is provided at points above its closed lower end with a plurality of discharge-perforations 12. A smaller water-delivery tube 13 also depends from the head of the generating-chamber and is provided at its extreme lower end with a restricted water-passage 14. Said tube 13 is concentrically located within and is spaced apart from the distributing-tube 11, and at its extreme upper end it is formed with a valve-seat 15.

The lower end of an elevated water-cup 16 surrounds the valve-seat 15 and is rigidly secured to the upper end of the tube 13. The upper end of this cup 16 is open and terminates quite close to the top of the spherical shell or case 1. This cup 16 constitutes a very important and novel feature in my present invention, as will presently be more fully described. A needle-valve 17 works vertically downward through the top of the shell 1 and through a bearing 18 secured thereon. This needle-valve has screw-threaded engagement with the said bearing 18 and at its upper outer end is provided with a head 19, by means of

which it may be turned. The conical lower end of said needle-valve coöperates with the lower end of said valve-seat 15. A small air-vent 20 opens through the upper portion of the needle-valve, so as to render atmospheric pressure available within the upper portion of the water-chamber formed within the shell 1. A tension-spring 22 is secured at one end to the interior of the shell 1 and is provided at its free end with a perforation, through which the smooth lower portion of the needle-valve 17 works with the said spring pressing against the threads thereof, so as to frictionally hold the valve in whatever position it may be set.

Within the generating-chamber and supported by the removable bottom 2 is a carbid-holder, made up of a pair of cup-like sections 23 24, that are telescoped together. The upper cup 24 is provided with a plurality of gas-escape passages 25 and with a depending imperforate axial sleeve 26, which surrounds all but the lower portion of the water-distributing tube 11. A loose perforate cylinder 27 is placed around the depending tube 26 and extends from the bottom to the top of the carbid-holder. A coiled spring 28, compressed between the top of the generating-chamber and the top of the carbid-holder, prevents the latter from jumping about within the generating-chamber. The carbid-holder should be about two-thirds filled with carbid, as indicated at *z* in Fig. 1, so as to leave room within the carbid-holder sufficient for the expansion of the carbid without causing the sections of the carbid-holder to separate under the process of generation and decomposition.

The numeral 29 indicates a flaring and approximately crescent-shaped hood, which fits over the upper portion of the reflector-back 7 and projects forward thereof. This hood is detachably held in position by curved spring-prongs 30, which frictionally clamp and extend nearly around the base of the reflector-back 7. This hood when the lamp is used as a bicycle-lamp cuts off the rays of light between the lamp and the rider's eyes and in all cases acts as a supplemental reflector to deflect the rays of light downward onto the ground.

In Fig. 1 character *y* indicates water, which may be introduced into the water-chamber when the needle-valve 17 is moved from working position. The water first introduced through the valve-passage in the shell 1 and bearing 18 will first fill the cup 16 and will then overflow and run into the main water-chamber of the shell 1. The said valve 17 being then placed in working position and screwed tight against the seat 16 will of course cut off the supply of water to the carbid and will stop the generation of gas. The generation is of course started by opening up the valve 17.

The lamp when used on a vehicle, such as a bicycle or automobile, will of course be kept

continuously vibrating or jumping about, and the water in the main chamber of the lamp will be kept splashing about under a violent agitation, and in view of the dome-like shape of the top of the case or shell 1 more or less water will be continuously directed into the water-cup 16, and in this way this elevated water-cup will be kept nearly or quite full of water as long as there is any water in the main water-chamber. This feature is of the greatest importance, for as a result thereof an approximately constant head and pressure of water is kept available for supplying the water to the carbid. The importance of this arrangement is further apparent when it is considered that the pressure under which the gas will be generated, and hence the projection of flame which will be afforded at the burner, is dependent on the head of the supply-water. Except for this cup the head of the water would constantly change and no water would be supplied when the level of the water in the main water-chamber was lowered below the level of the valve-seat 15.

The water supplied when the valve 17 is opened will run through the tube 13, out through the restricted passage 14, into the water-distributing tube 11 and will fill the same up to its lowest perforation 12, and will then run out into the perforate cylinder 27 and thence through the perforations thereof into contact with the carbid. The maximum supply of water is limited by the size of the restricted passage 14, and this restricted passage is effectually protected from being stopped or plugged by the decomposed products of the carbid, such products being kept therefrom, first, by the perforate cylinder 27 and, second, by the water-distributing tube 11. Furthermore, the perforations 12 of the said tube 11 are protected from these products of decomposition by the depending sleeve 26.

The gas generated will of course escape from the carbid-holder into the generating-chamber through the perforations 25 and from the generating-chamber will pass out through the burner-nipple 9 and tip 10.

The lamp above described, while extremely simple and of comparatively small cost, has in practice been found efficient and highly satisfactory for the purposes had in view.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A portable gas-generator of the character described, having within its water-chamber an open-topped feed-cup projecting above the normal water-level and adapted to be filled by water splashed about within said water-chamber, substantially as described.

2. A generator of the character described, having the dome-like top, and having within its water-chamber an open-topped feed-cup adapted to be filled with water splashed about within said water-chamber, substantially as described.

3. A generator of the character described having within its water-chamber an open-topped feed-cup adapted to be filled with water splashed about within said water-chamber, 5 and a depending water-delivery tube leading downward from the bottom of said feed-cup into the generating-chamber, substantially as described.

10 4. In a generator of the character described, the combination with a spherical shell having an interior vertically-disposed cylindrical generating-chamber, and a removable bottom section normally closing the lower end of said generating-chamber, of an elevated centrally-

located open-topped feed-cup located within 15 the water-chamber formed within said shell outside of said generating-chamber, a carbid-holder within said generating-chamber, and a water-delivery tube depending from the bottom of said feed-cup into said generating- 20 chamber and into said carbid-holder, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

LEROY S. BUFFINGTON.

Witnesses:

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