No. 705,166.

Patented July 22, 1902.

D. J. VAN PRAAG.

ACETYLENE GAS GENERATOR.

(Application filed Aug. 8, 1901.)

(No Model.)

Fig. 1.

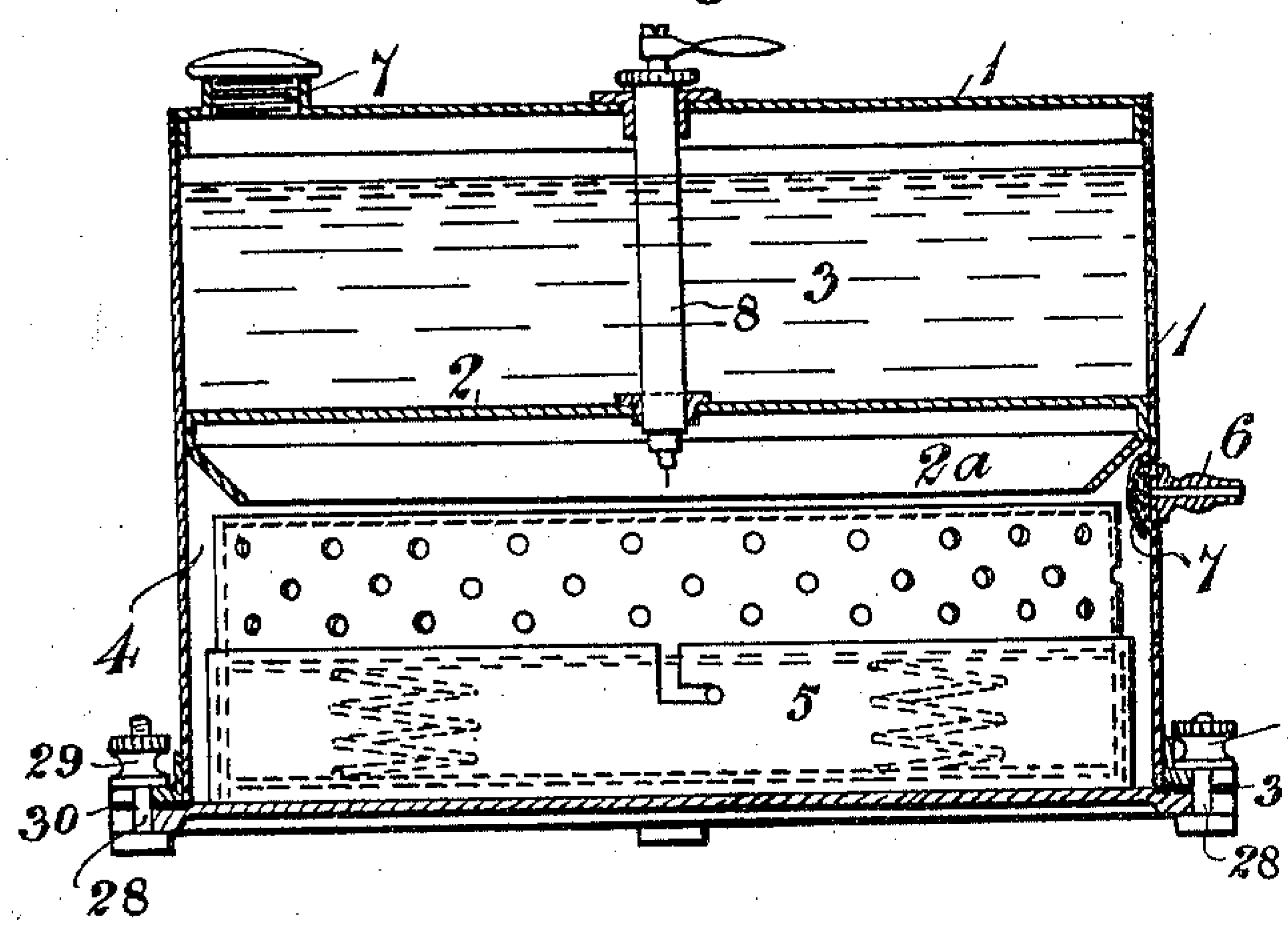


Fig. 2.

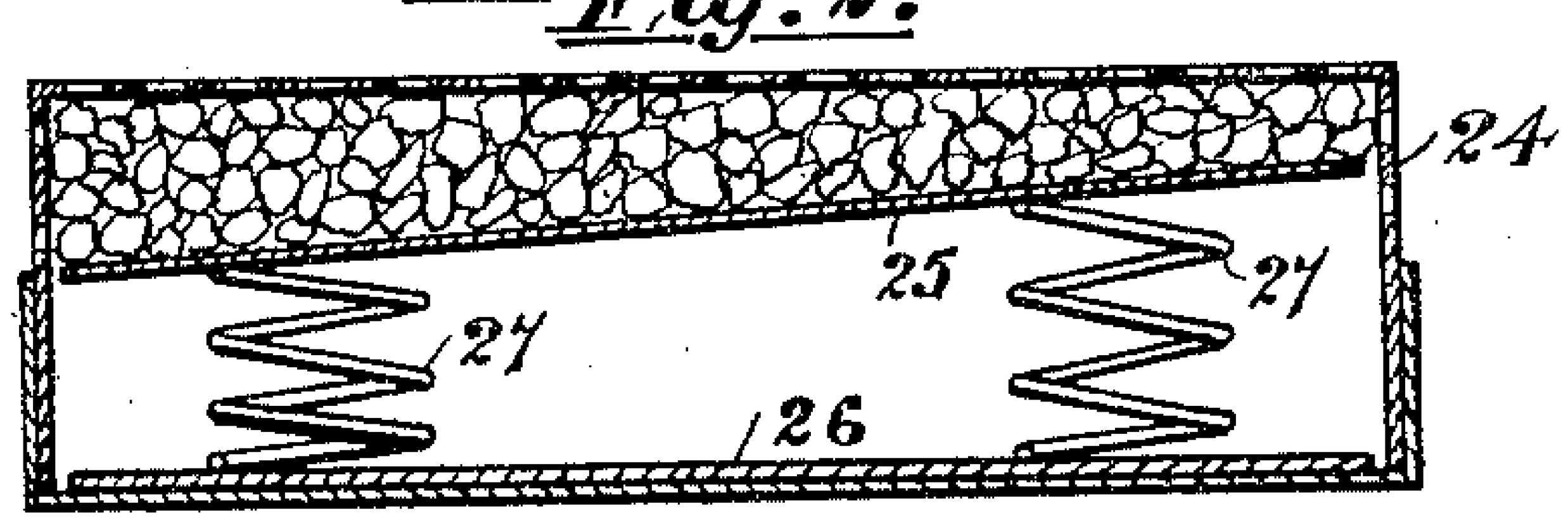
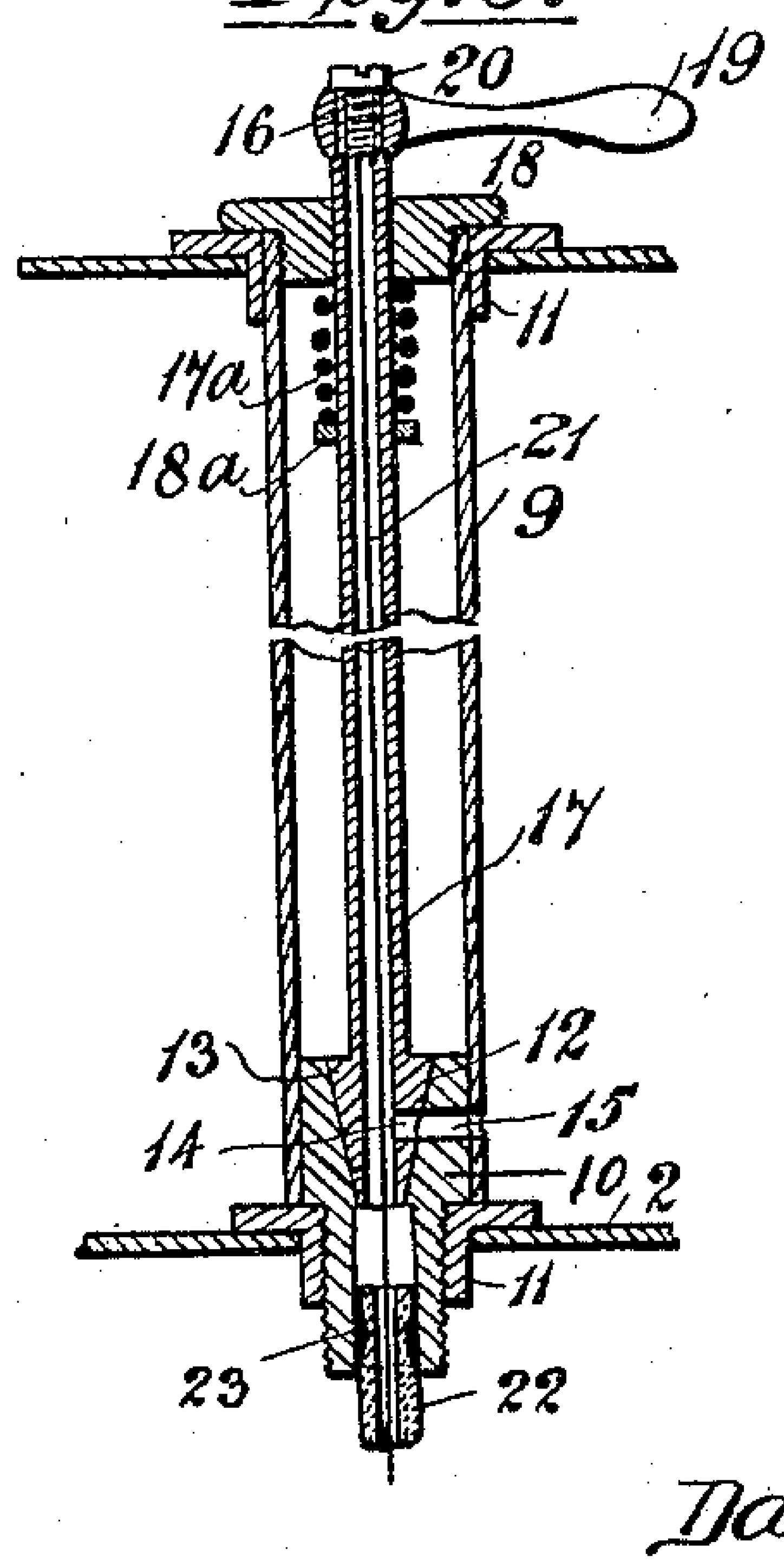


Fig. 3.



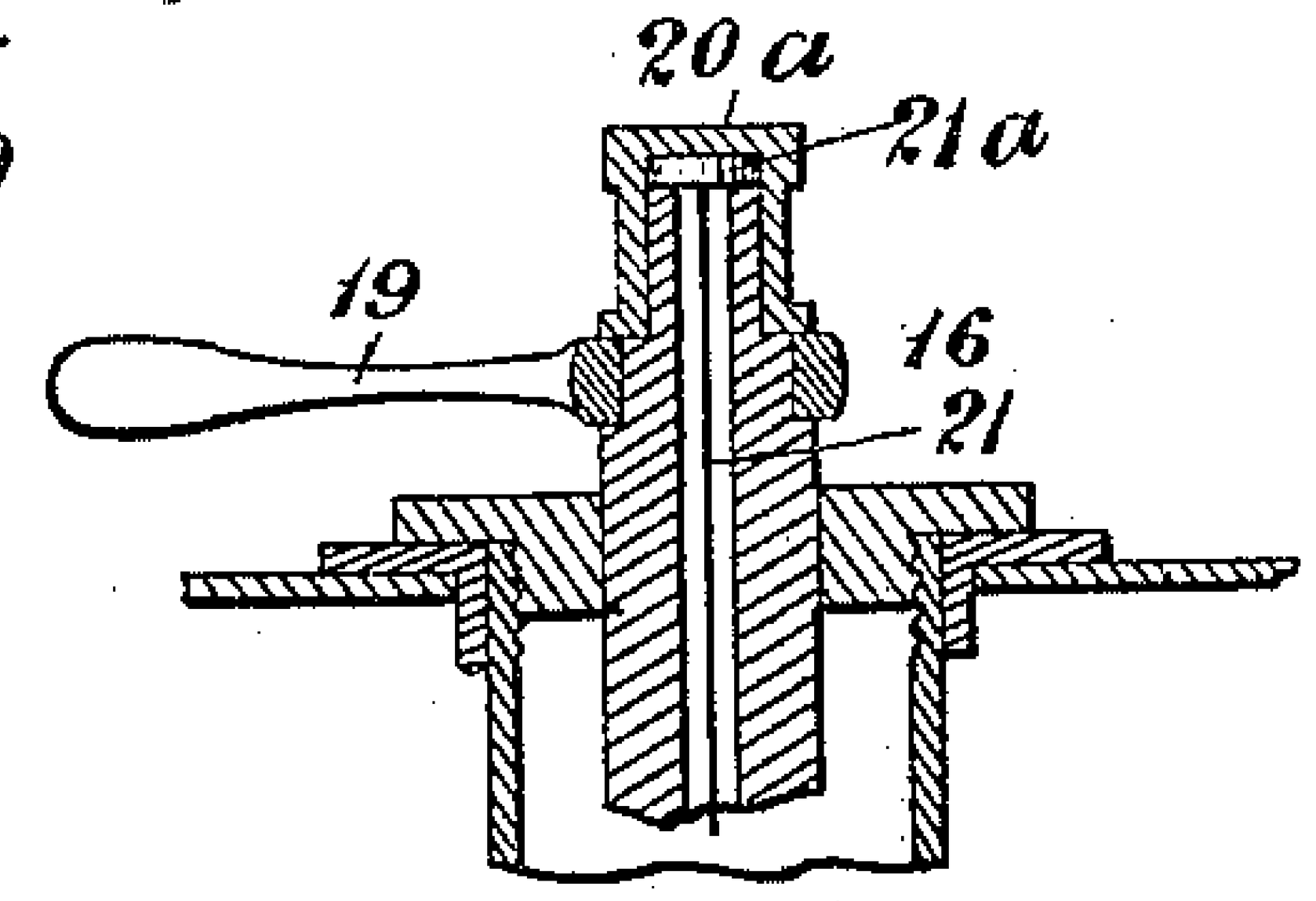


Fig. 4.

Attest:
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UNITED STATES PATENT OFFICE.

DAVID JOHN VAN PRAAG, OF LONDON, ENGLAND.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 705,166, dated July 22, 1902.

Application filed August 8, 1901. Serial No. 71,398. (No model.)

To all whom it may concern:

Be it known that I, DAVID JOHN VAN PRAAG, a subject of the King of Great Britain and Ireland, residing at 1ª, Shacklewell Lane, Hackney, London, N. E., England, have invented certain new and useful Improvements in Acetylene-Generating Apparatus, of which the following is a specification.

My invention relates to improvements in acetylene-generating apparatus of the portable type for use in mines, workshops, yachts, vehicles, and in other situations where a powerful light is desired which is capable of being readily moved about.

My invention is more particularly applicable to that class of apparatus in which water is discharged through a suitable feed device onto calcium carbid for generation of the acetylene gas. In such apparatus as hitherto constructed considerable difficulty is experienced in obtaining regular gas-generation, and consequently steady gas-pressure, on account of choking of the water-supply, caused by the disintegration due to corrosion of the metal parts of the feed device, and also on account of the defective means provided for insuring that the water is continuously brought into contact with the calcium carbid. The object of my invention is to overcome these defects and to produce an efficient apparatus which requires little attention, can be easily handled, and is not liable to get out of order under the treatment to which it is subjected in carriage from place to place.

My invention consists in providing the water-supply device with a feed-regulating wire of non-corrodible metal and in constructing the nozzle through which the wire passes of glass, porcelain, or other insulating material, thereby avoiding blocking of the water-discharge passage from corrosion produced by the gas or by electrolytic action or other cause.

My invention also consists in providing the carbid-container with a spring-feed, so arranged as to cause the unattacked carbid to be forced into contact with the top of the container over the whole surface of the latter, so as to insure a steady evolution of gas during the whole period of burning of the lamp or lamps which the apparatus supplies.

My invention further consists in the details of construction hereinafter specified, and pointed out in the claims.

In the accompanying drawings, representing apparatus constructed in accordance with my invention, Figure 1 is a vertical section of the apparatus. Fig. 2 is a vertical section of the carbid-container. Fig. 3 is a similar section of the water-supply device and controlling-valve, and Fig. 4 is an enlarged detail view illustrating a modification of the suspension of the feed-regulating wire shown in Fig. 3.

Referring to Fig. 1, I provide an outer casing 1, which may be of circular or other suitable form and is divided into two parts by a diaphragm 2, the upper part 3 constituting the water-cistern and the lower part 4 the gas-chamber, in which the calcium-carbid container 5 is situated. Near the top of the gas-chamber a gas-exit nozzle 6 is fitted across the entrance, to which is placed a wire-gauze straining-disk 7 to prevent stoppage of the nozzle by solid particles carried away by the gas. The nozzle is arranged so that a rubber or other flexible tube may be readily coupled to it for connecting the apparatus to a lamp or burner of any well-known kind; but, if desired, the lamp or burner may be fitted direct to the apparatus. The water is filled into the cistern 3 through an opening closed by a removable plug 7. At the central part of the cistern 3 I provide the water-feed device 8, this device consisting of an outer tube 9, Figs. 3 and 4, which at its lower end is provided with a plug 10, which screws into a gland 11, fitted into the diaphragm 2, a similar gland 11 in the top of the casing 1 forming a close fit on the outside of the tube 9 at its upper end. The plug 10 is hollow, and its upper part 12 forms the seat for a conical plug-valve 13, which is provided with a side opening 14, adapted to register with an opening 15 in the plug 10 and in the wall of the tube 9 when the valve is open for the supply of water from the cistern 3. The valve 13

forms an extension of a tube 17, which passes up through a gland 18, screwed into the top of the tube 9, and is formed with a squared end 16, onto which is fitted an actuating-handle 19. The handle 19 is secured in place on the tube 17 by a screw 20, to the point of which is attached the water-feed-regulating wire 21. In the arrangement illustrated in Fig. 4 the handle 19 is fixed by means of a cap 20^a, which screws onto an upward extension of the tube 17, the feed-regulating wire 21 being attached to a separate removable disk 21^a, clamped between the cap 20^a and the top of the tube. The valve 13 is held onto its seat by the spring 17^a, surrounding the tube 17, between the collar 18^a and the gland 18.

The feed-wire 21 may be constructed of any suitable metal, and in order to prevent corrosion and the stoppage of the discharge-passage through the nozzle 22 I plate the wire with gold or other metal which oxidizes or tarnishes with difficulty, or instead of wire I may employ a glass or suitable fiber for regulating the feed. The nozzle 22, through which the wire passes, is constructed of glass, porcelain, or other suitable non-metallic substance and is secured in position in the plug 10 by solder or other adhesive substance, which is run in between the interior wall of the plug and the neck 23, formed on the nozzle. Both the nozzle and the interior of the plug 10 may be corrugated or roughened in order to make the fastening of the nozzle as secure as possible.

By the construction of feed-wire and nozzle which I have described I avoid corrosion resulting from the gas generated or from electrolytic action, and thus prevent choking of the water-supply passage.

The carbid-container 5, which is situated in the chamber 4 beneath the nozzle 22, is of circular section and is formed in two parts, the upper part 24 fitting into the lower part. The upper part 24, which is perforated at the top and sides, is secured to the lower part by a bayonet-joint or other well-known form of fastening which admits of the ready separation of the parts for cleaning and charging with carbid. Inside of the container I provide two removable plates 25 and 26, Fig. 2, between which I arrange two or more springs 27. The lower plate 26, which may be dispensed with, if desired, rests on the bottom of the container, and the upper one 25 forms the presser-plate, on which the calcium carbid is placed.

By the employment of two or more springs, as shown, the carbid will be held in contact with all parts of the perforated top of the carbid-receptacle irrespective of whether it has been evenly distributed in the receptacle. The action of the springs is clearly illustrated in Fig. 2.

The bottom of the casing is removable in order to allow access to the container for cleaning and charging purposes, and it is secured to the casing by means of bolts 28 and nuts 29, a rubber or other packing washer 30 being provided to form a gas-tight joint.

In order to prevent damage to the feed-wire owing to movement of the carbid-container in the chamber 4, a suitable stop or stops adapted to engage with the container is or are provided on the interior casing 1. In the apparatus shown this stop is formed by a ring or flange 2^a, spun on the diaphragm 2, which ring or flange depends below the lower end of the valve, as shown in Fig. 1, and serves as a guard to prevent contact of the carbid-container with the valve. If desired, the container may be secured firmly against movement in the chamber between the bottom of the casing and the ring 2^a, in which case the part of the ring which bears on the top of the container may be faced with rubber or other yielding material.

Instead of constructing the apparatus with a removable bottom a semicircular opening may be cut in the side of the casing, through which the container may be withdrawn and replaced, a suitable door or cover being provided for the opening.

The top of the casing under the handle 19 is suitably marked to indicate whether the water-valve is open or closed. The amount of water which flows through the nozzle 22 is governed by the diameter of the feed-wire which is employed, and this is adjusted according to the capacity of the apparatus. When the apparatus is in action, the feed-water supply is automatically controlled by the pressure of the gas which accumulates in the chamber 4, the gas-pressure equilibrating the pressure due to the depth of water in the cistern.

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

1. The combination with the carbid-chamber and superposed water-chamber, of a plug seated in the bottom of the water-chamber, having a central passage flaring at its upper end, and a lateral port into the water-chamber, a tube extending upwardly from said plug through the water-chamber, a conical valve seated in the upper end of the plug and having a central bore and a tubular stem, said valve having a transverse passage from said bore, a glass or porcelain nipple in the lower end of the plug, and a wire plated with non-corrodible material extending through said valve and stem and through the nipple, substantially as described.

2. In an acetylene-gas apparatus, a carbid-container having a perforated top plate, means for supplying water thereto, a loose pressure-plate for supporting the carbid, and a plurality of springs supporting said plates at different points whereby all parts of the plate are forced upwardly irrespective of the distribution of the carbid upon the plate, substantially as described.

3. In an acetylene-gas apparatus, the combination with the generating-chamber and superposed water-chamber, of a valve in the bottom of said water-chamber, a cleaning-wire extending down through the valve, a removable carbid-container within the generating-chamber, and a guard depending below the lower end of said wire and serving as a stop to prevent contact of the carbid-container with said wire, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

DAVID JOHN VAN PRAAG.

Witnesses:

BERTRAM H. T. MATTHEWS,

GEORGE I. BRIDGES.