No. 658,691. Patented Sept. 25, 1900.

P. WIENS.

ACETYLENE GAS GENERATOR.

(Application filed Mar. 14, 1899.)

(No Model.)

Fig. 2.

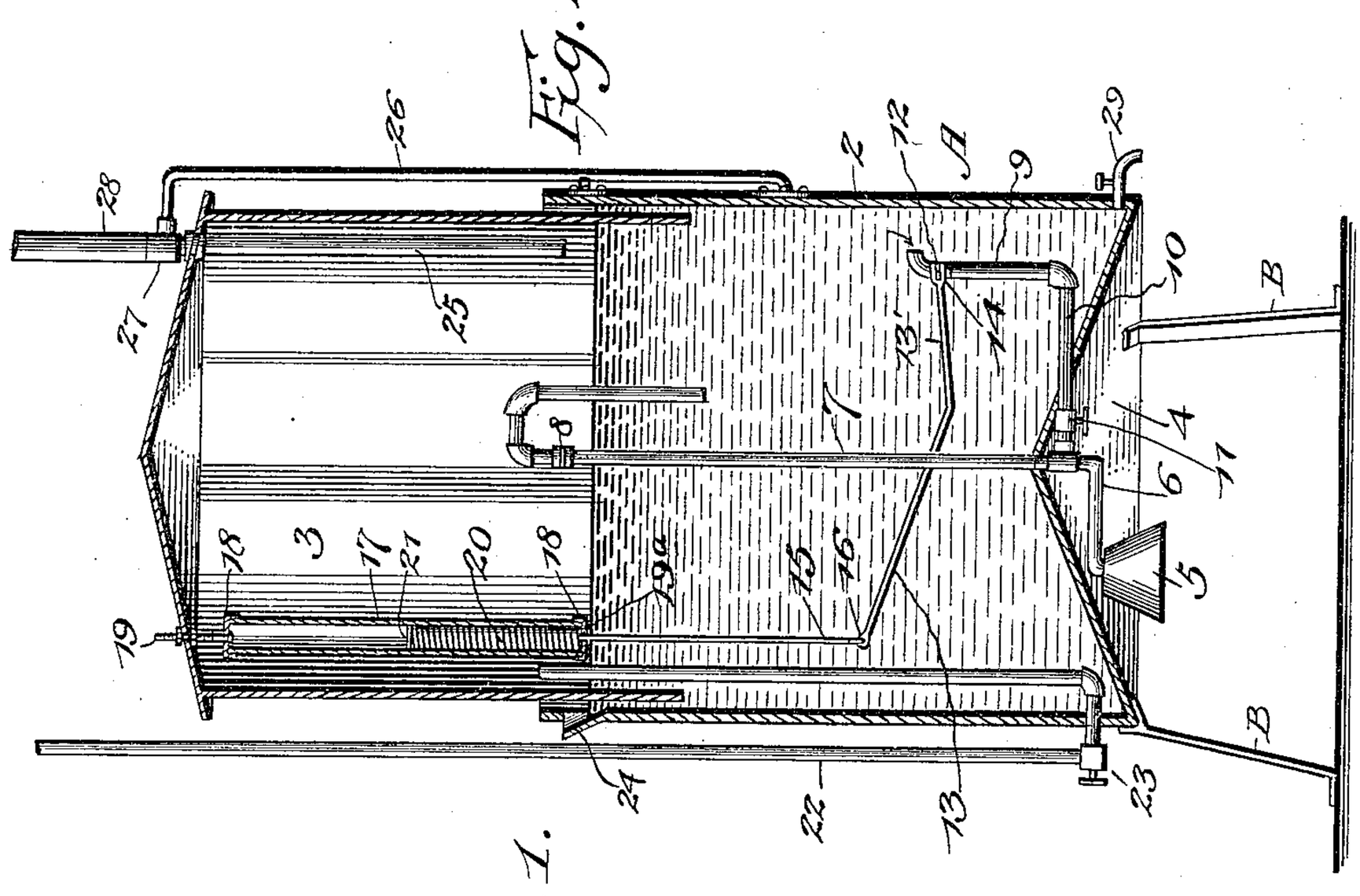
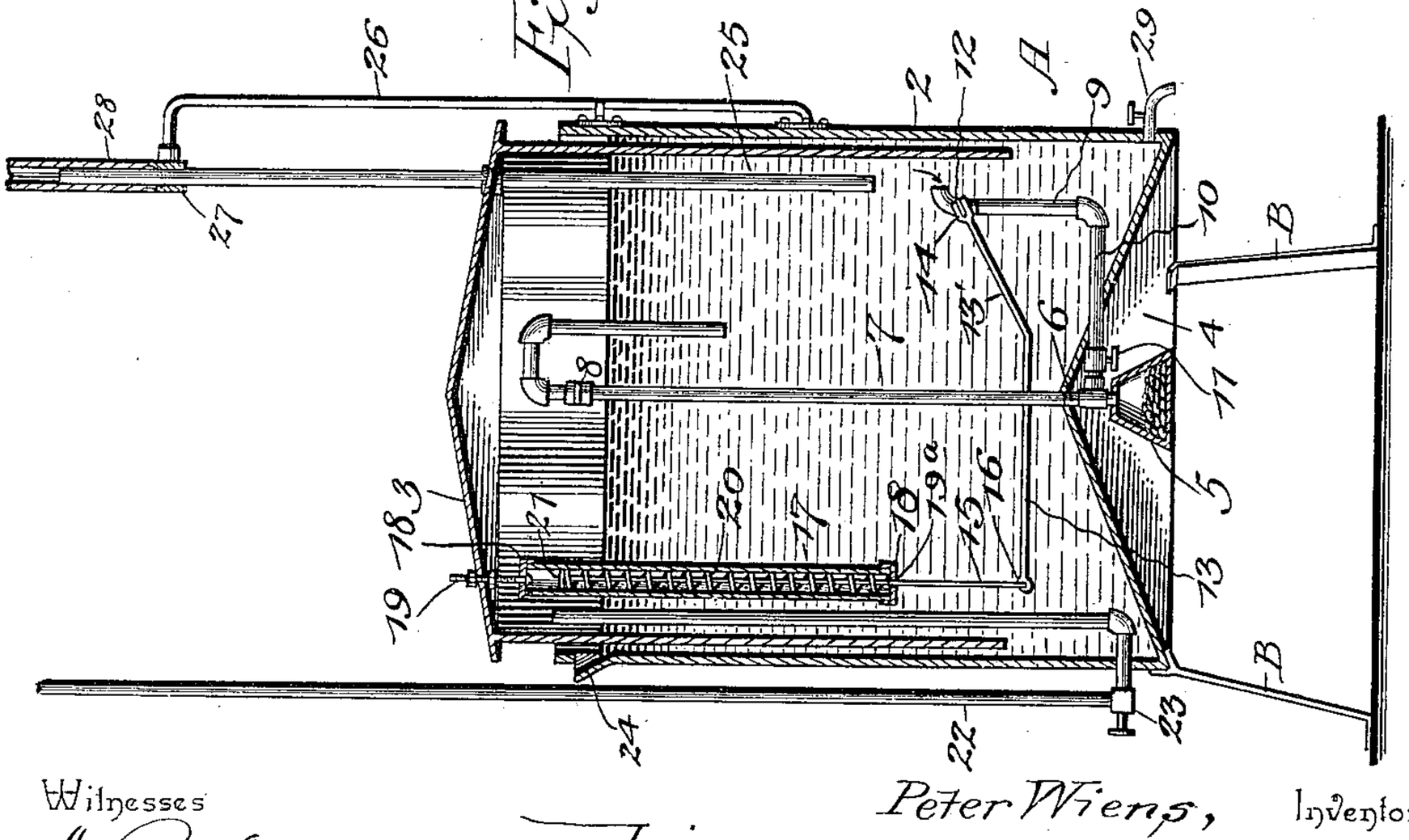


Fig. 1.



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PETER WIENS, OF BRADSHAW, NEBRASKA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 658,691, dated September 25, 1900.

Application filed March 14, 1899. Serial No. 709,073. (No model.)

To all whom it may concern:

Be it known that I, PETER WIENS, a citizen of the United States, residing at Bradshaw, in the county of York and State of Nebraska, have invented a new and useful Acetylene-Gas Generator, of which the following is a specification.

This invention relates to acetylene-gas apparatus for generating gas formed by the admixture of calcium carbid and water; and the object of the invention is to provide a simple and efficient device of the character specified, which is constructed to effect the proper mixture of the elements specified and to also automatically stop the supply of water when a predetermined amount of gas has been formed, thereby preventing explosions of the tank.

With these ends in view the invention consists in the novel combination of elements and in the construction and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a longitudinal central section of a gas-generating apparatus constructed in accordance with my invention and showing the bell or upper section of the tank in its lowermost position and the water-supply-controlling valve as wide open. Fig. 2 is a similar view of said apparatus, showing the bell in its topmost position and said valve as closed.

Similar characters denote like and corresponding parts in both figures of the drawings.

The apparatus includes in its construction a tank or receptacle A, in which the various parts are incased and which consists of a lower section or shell 2 and an upper section or bell 3, freely fitted within the section 2 for vertical sliding movement, and these two parts are closed at their lower and upper ends, respectively, and are substantially cylindrical in shape. The bottom 4 of the fixed section of the tank is substantially conical in shape, forming a reëntrant bottom, and is adapted to surround the similarly-shaped carbid container or cup 5, the upper end of which is in threaded engagement with the coupling 6, which in turn is in threaded engagement with the wall of the opening formed at the apex or top of the conical bottom 4. To provide for the positioning and removal of the carbid-container, the tank 2 is supported upon suitable legs B. To the upper end of the coupling 6 the vertical gas-conveying pipe 7 is attached, the upper end of said pipe being bent over, so that the discharge end thereof is disposed at a point below the level of the water contained within the stationary shell 2, whereby the gas generated will be discharged into the water below the surface thereof and will be caused to pass upwardly through the water and into the space between the surface of the latter and the upper end of the tank, thereby purifying the gas. The pipe 7 is provided with a suitable check-valve 8 to automatically cut off any back pressure which might arise during the operation of the device.

The water which is contained within the tank 2 is utilized, in conjunction with the carbid in the carbid-container, to generate the gas and is conveyed to the container through an approximately L-shaped pipe 9, having its vertical arm arranged within the interior of the tank and its horizontal arm or branch 10 passing through one side of the conical bottom of the tank and communicating with the coupling 6 above the carbid-container. By reason of connecting this water-supply pipe with the coupling 6 the container is free to be removed without affecting the supply-pipe, and the latter is provided with a valve or stop-cock 11, exterior of the conical bottom, whereby the supply of water may be conveniently shut off when it is desired to remove the container 5.

At the upper open end of the supply-pipe is provided a controlling-valve or turning-plug 12, having an operative connection with the floating or movable bell 3, whereby the latter in its varying vertical movement, caused by the varying amount of gas contained within the bell, operates the valve or turning-plug to control the supply of water to the carbid, and thereby automatically controls the amount of gas generated. The means for operatively connecting the valve or turning-plug 12 with the bell comprises a horizontal lever 13, having one end bifurcated, as at 14, and the stem

of the controlling-valve is snugly received within this bifurcation. The other end of the lever 13 has a vertical rod 15 pivoted thereto, as at 16, and which extends upward nearly to the top of the bell 3, being received within an inclosing casing 17, pendent from the top of the bell. This casing is preferably a length of pipe of suitable diameter, having at its opposite ends removable screw-caps 18, and suspended from the top of the bell by means of a short rod 19, connected to the upper screw-cap. The lower screw-cap is provided with a central opening 19ª, through which the vertical rod 15 passes into the interior of the casing 17. Encircling the rod and contained within the casing is a coiled spring 20, and the vertical rod 15 is provided at its upper end with a transverse head or pin 21, resting upon the upper end of the coiled spring and forming a yielding connection between the rod and the bell. In view of the construction just described it will be apparent that as the gas is generated and accumulates within the bell the latter will be raised by the buoyant effect of the gas and the rod 15 will draw upward the horizontal lever 13 upon its fulcrum connection with the stem of the controlling-valve 12, whereby the latter will be operated to check the supply of water to the carbid-holder and the generation of gas will be automatically regulated. It will be understood that it is not necessary or desirable that the supply of water be checked immediately upon the raising of the bell, and therefore the spring 20 has been provided, which will compress under the raising action of the bell, and the rod 15 will not be operated until the bell has risen to a predetermined elevation and the spring has reached a predetermined degree of compression. The horizontal portion of the lever 13 is arranged as near the bottom of the shell as possible and has the angled or upwardly-extending portion 13′ connected with the stem of the controlling-valve 12, so that a long leverage may be obtained to operate the valve as slowly and gradually as possible.

An approximately U-shaped discharge-pipe 22 has one of its branches arranged within the tank with its open end disposed above the level of the water and in communication with the gas-space. The other branch extends through the side of the tank near the bottom thereof and conveys the gas to various points for consumption. This outside branch is provided with a suitable stop-cock 23, whereby the discharge of gas may be regulated and entirely shut off, as desired. At the upper open end of the tank is provided a suitable mouth or spout 24, through which water may be supplied to the tank as it becomes necessary in the operation of the device.

To guard against an oversupply and explosion of the gas within the bell, the latter has an escape-pipe 25, extending through the top thereof. The lower open end of this pipe is normally dipped below the surface of the water within the tank, forming a water seal to normally prevent the escape of gas. Connected to the exterior of the tank and extending a suitable distance above the same is an inverted approximately L-shaped bracket or support 26, having a threaded coupling 27, to which is connected a discharge-pipe 28, which opens out above the roof of the building or at any preferred place into the open air. The escape-pipe 25 is of smaller diameter than the discharge-pipe 28 and is slidably fitted therein through the coupling 27, so that the escape-pipe is free to move with the bell, to which it is fixedly connected. Should an oversupply of gas be generated, the bell will be raised upward until the lower open end of the escape-pipe 25 is elevated out of the water within the tank, which will permit of the free discharge of the gas through the pipes 25 and 28 to the outside air, thus relieving the apparatus from the excess gas and preventing a possible explosion of the same.

It will be noted that the discharge-pipe 28 is fixed and permanently houses the upper end of the escape-pipe 25, the latter extending a sufficient distance into the discharge-pipe, so that the said escape-pipe may not become entirely disengaged from the discharge pipe when the bell has reached its lowermost position. Otherwise the escape-pipe would not again enter the discharge-pipe upon the upward movement of the bell. Thus it will be seen that this arrangement of the escape and discharge pipes provides a convenient guide for the vertical movement of the bell, and therefore holds the latter in its proper relative position within the water-tank.

In Fig. 2 is illustrated a modified form of coupling for connecting the carbid-container 5 to the gas-pipe 7, which conveys the gas from the container to the bell. This coupling is substantially L-shaped, whereby the container is disposed near one side of the bottom, instead of centrally thereof, so that it may be more readily reached for removal.

The bottom of the tank 2 is conical in form, as hereinbefore described, for the purpose of providing a convenient and safe housing for the carbid-container and to provide for a complete and perfect drain of the water within the tank. A drain-cock 29 is provided at the lower edge of the tank 2 to draw off the water for purposes of cleaning and repair.

In the operation of the apparatus the tank 2 is supplied with a predetermined amount of water, so as to seal the bent end of the gas-pipe 7 and the escape-pipe 25, the valve or stop-cock 11 of the pipe 9, which supplies the water to the carbid container or generator, having been previously shut off to prevent loss of the water. The carbid-container is supplied with the carbid and is then fitted to the coupling 6, after which the stop-cock 11 is turned on and the water is permitted to

flow to the generator. As the gas is generated the bell is raised thereby and the controlling-valve 12 is operated through its connections with the bell to automatically regulate the supply of water to the generator, and consequently regulate the generation of gas.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claim may be resorted to without departing from the spirit or sacrificing any of the advantages of the present invention.

Having thus described the invention, what I claim is--

In an apparatus of the class described, the combination with a water-tank having a reentrant bottom, and a gas-bell, of a carbid container and generator housed by the reentrant bottom of the tank, an approximately L-shaped water-supply pipe communicating from the tank through the bottom thereof to the generator and having a controlling-valve located within the tank, a horizontal lever located within the tank and having an upwardly bent or angled portion which is operatively fulcrumed to the stem of the valve, and a rod pivoted to the opposite end of the lever and connected to the top of the bell, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

PETER WIENS.

Witnesses:
J. F. ELLIOTT,
MICHAEL ORMAND.