

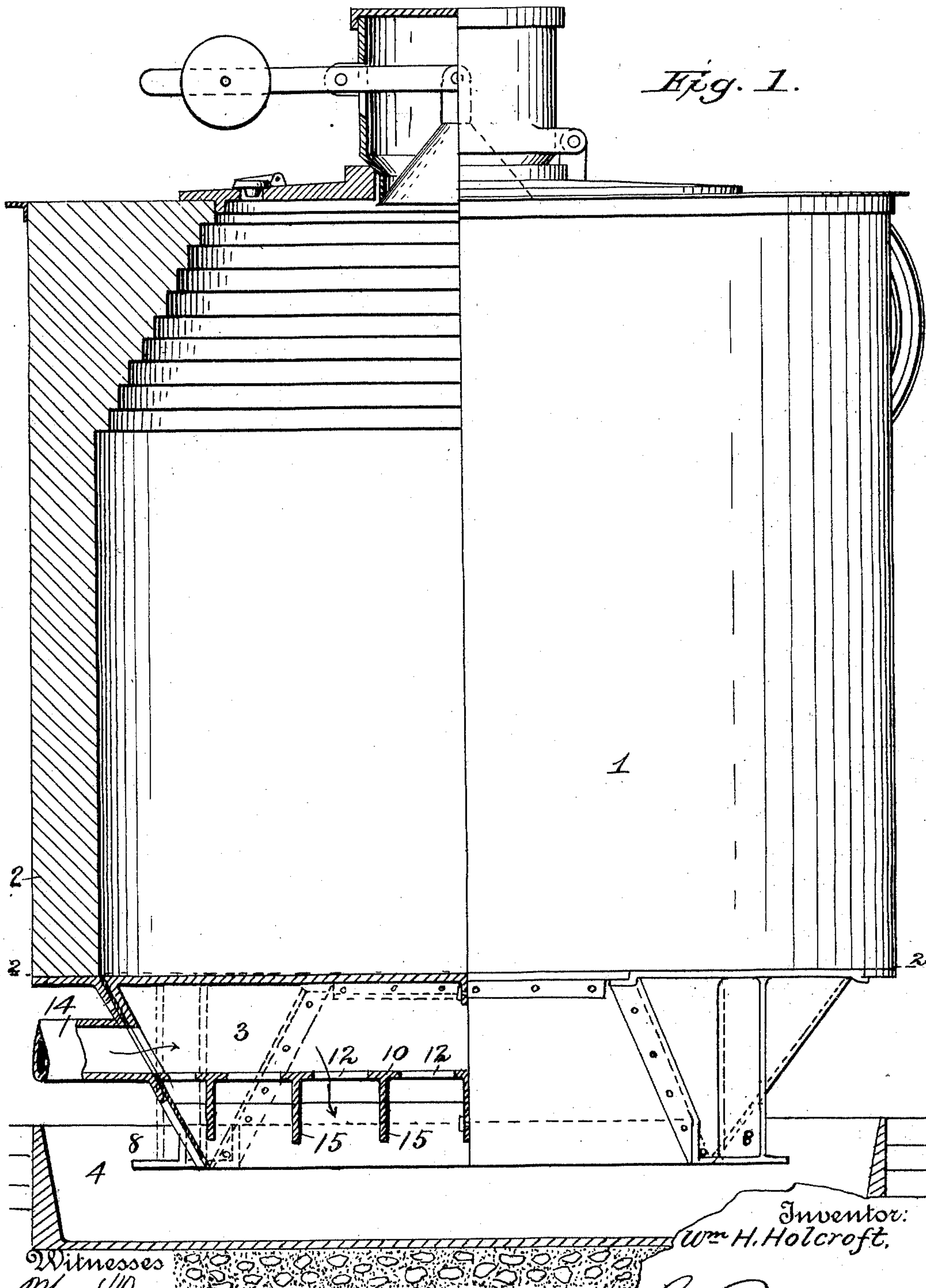
No. 759,179.

PATENTED MAY 3, 1904.

W. H. HOLCROFT.  
WATER SEAL GAS PRODUCER.  
APPLICATION FILED DEC. 15, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses  
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2 SHEETS—SHEET 2.

Fig. 3

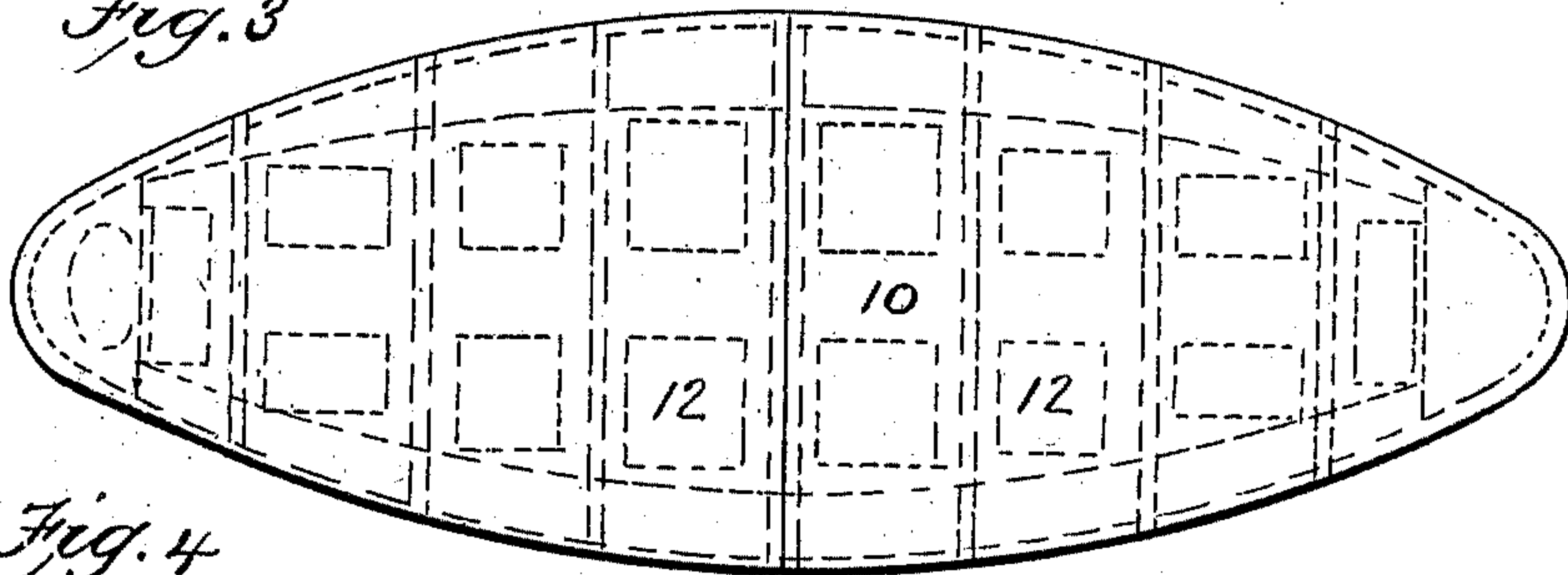


Fig. 4

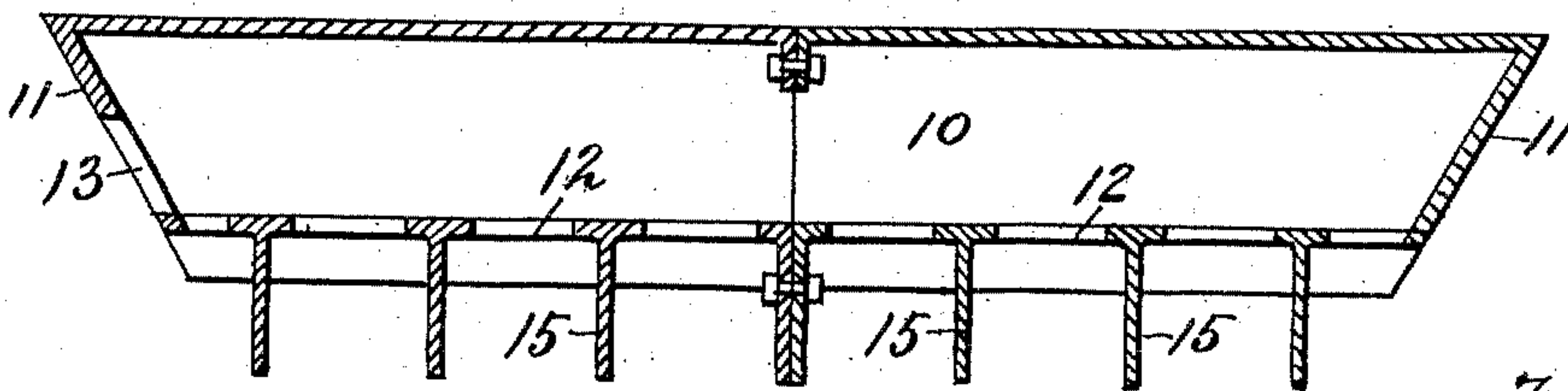


Fig. 6

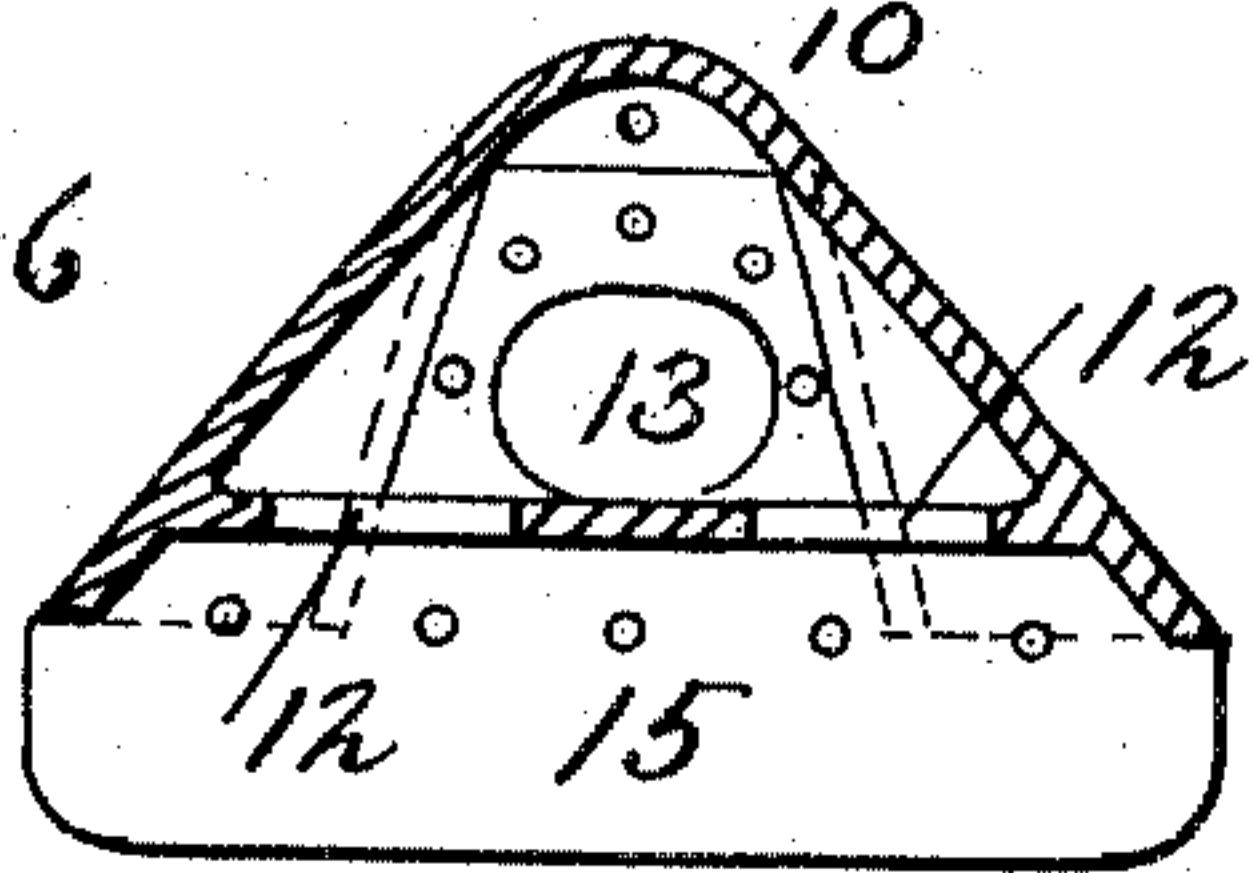
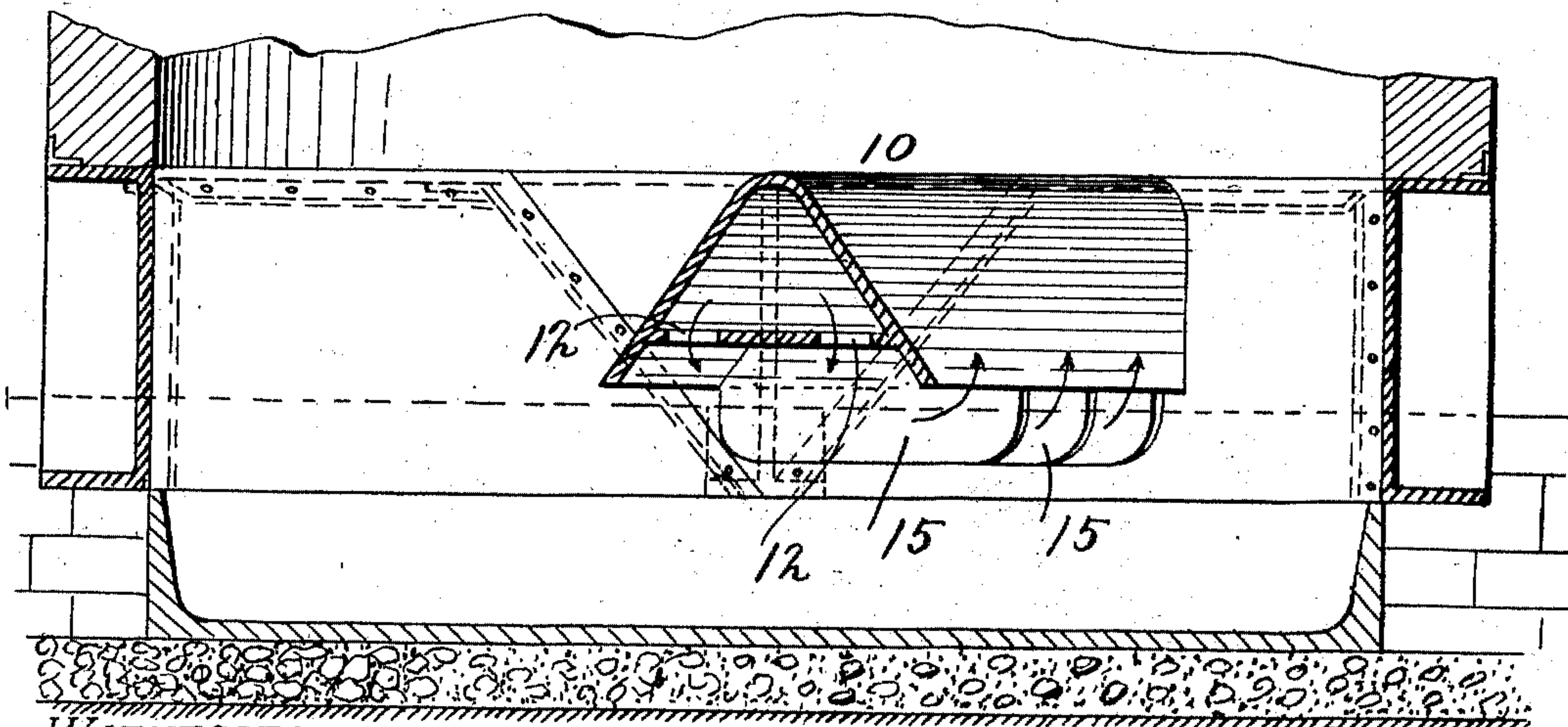
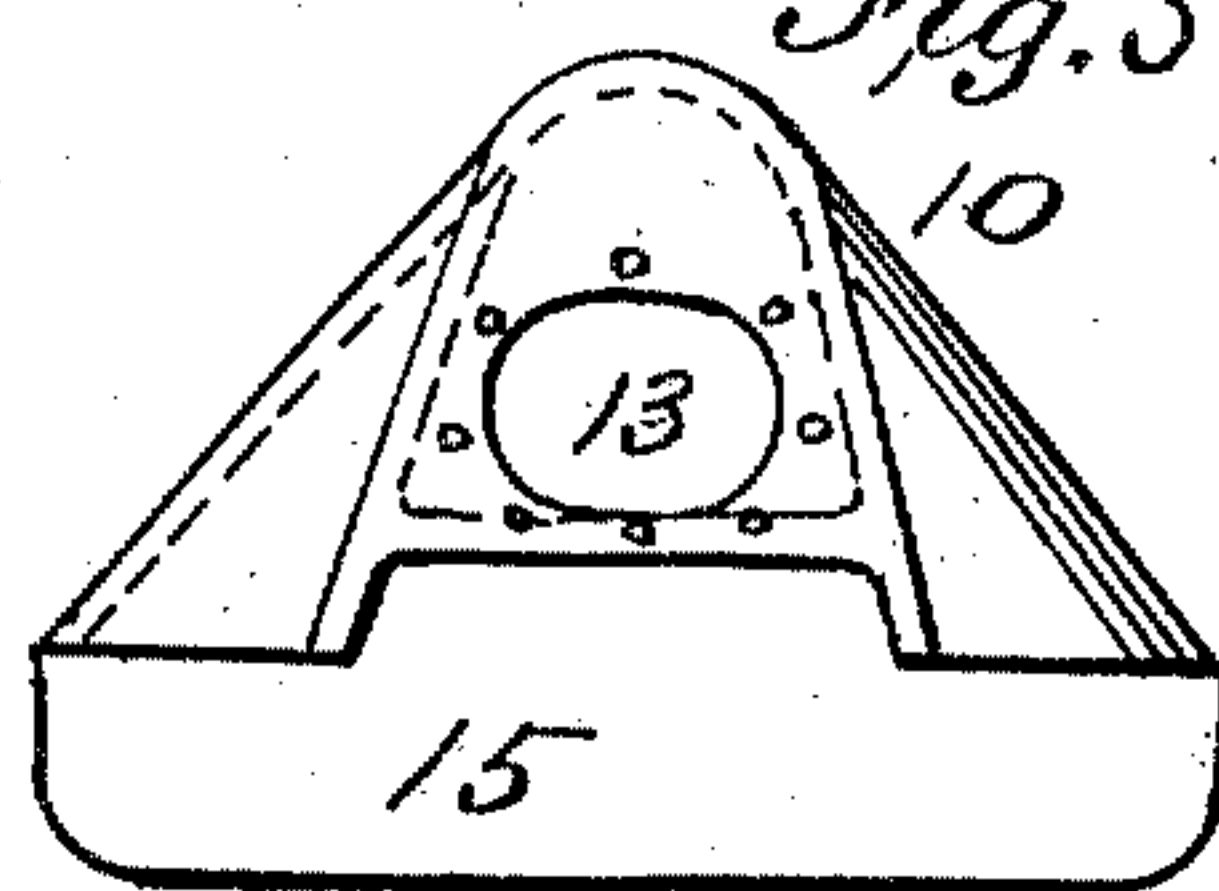


Fig. 5



WITNESSES:

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Fig. 2.

INVENTOR:

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# UNITED STATES PATENT OFFICE.

WILLIAM H. HOLCROFT, OF CHESTER, PENNSYLVANIA, ASSIGNOR OF  
ONE-HALF TO EDMUND V. HOLCROFT, OF CHESTER, PENNSYLVANIA.

## WATER-SEAL GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 759,179, dated May 3, 1904.

Application filed December 15, 1903. Serial No. 185,298. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. HOLCROFT, a citizen of the United States, residing at Chester, in the county of Delaware and State of Pennsylvania, have invented new and useful Improvements in Water-Seal Gas-Producers, of which the following is a specification.

This invention has relation to blast-boxes forso-called "water-seal gas-producers;" and it has for its object the provision of improvements in the blast-box and its adjuncts with a view to uniformly distribute the air through the coal or hydrocarbonaceous matter under treatment.

To these ends the invention consists of the improvements hereinafter fully and clearly set forth in connection with the accompanying drawings, forming a part of this specification, in which drawings—

Figure 1 is a side view, one half in section and the other half in elevation, showing a water-seal gas-producer equipped with my improved blast-box. Fig. 2 is a vertical sectional view taken on a line diagonal to that of the line on which the sectional part of Fig. 1 is taken. Fig. 3 is a plan view of the blast-box detached. Fig. 4 is a longitudinal sectional view of the blast-box. Fig. 5 is an end view of the same. Fig. 6 is a central vertical cross-sectional view.

Of the reference-numerals in the drawings, 1 designates the shell of the gas-producer proper lined with the fire-brick 2 and equipped at its upper end with means for charging devices common to this form of apparatus, said equipments not detailed in the description here, since they form no part of the present improvements.

3 designates the ash-hopper, which is located below the gas-producer and extends, as herein shown, slightly into the water seal 4 below the entire apparatus.

In order that the working of this form of gas-producer may be clearly understood, it may be stated that the conversion of such hydrocarbonaceous matter as soft-coal into gas is accomplished by burning it in a thick fire, at the same time blowing steam and air through it and collecting the gases evolved.

The space below the water-level is supposed to be full of ashes, which can be removed from time to time without interrupting the operation of the producer. The ashes in practice will also fill the space for one or two feet above the water-line; but above this mass in the producer will be glowing carbon.

In supplying steam and air to the burning carbon to promote its combustion I provide a blast-box 10, which, as shown, is located in the ash-hopper and as a consequence is buried in the ashes. Its upper side is dome-shaped in cross-section, as shown, to permit the ashes to freely slide off into the water seal below it, and its ends are beveled, as at 11, so that they may rest upon the beveled sides of the ash-hopper and support the blast-box in substantially level position when it is used in a hopper of this description.

The blast-box is closed excepting at its bottom, where outtake-apertures 12 are formed therein, through which the air and steam may pass to support combustion of the carbon in the producer, as before stated. The blast-box has also an opening in the end, as at 13, through which the pipe 14 may extend. Depending flanges 15 extend across the bottom of the blast-box and form partitions at the sides of the openings 12 between them, thus forming practical cells as outtakes for the air in the bottom of the blast-box. As stated, the blast-box will be buried in the ashes, and it may be further explained that the outer edges of its bottom will extend to within a few inches of the water-line; but the diversion flanges or walls 15 of the cells 12 will extend into the water for several inches.

A steam-blower is connected to the pipe 14, and when the apparatus is in use air or air and steam is blown into the blast-box and forced through the openings or cells 12 in the bottom of the box down between the depending flanges or partitions into the water forming the seal, whence it may pass from under and rise along the sides of the blast-box (see the arrows in Figs. 1 and 2) and thence to the burning fuel, being evenly distributed throughout the entire mass.

It is to be noted that the depending flanges



15 are a substantial part of the blast-box, considered in its entirety, and that the latter is, as it were, submerged in the water forming the seal with the air outtakes or openings in  
5 the water, so that all of the air forced into the box escapes through the openings into the water and passes up around the sides of the box to the burning carbon, thus avoiding the forcing of the air directly from the blast-box  
10 or any supplying means into contact with the fuel. When the latter method is followed, as is the case with gas-producers of common construction, the air following the course of least resistance will pass through the fuel where it  
15 is loose or least compact and burn holes there-through with a number of mischievous and undesirable effects.

The blast-box is, as it were, inverted, and the air is blown downward through cells which  
20 distribute it evenly in the box, and it escapes from said cells downward upon and into the water, whence it rises into the burning fuel.

It is obvious that many changes may be made in the form and arrangement of parts and features of my invention without departing from  
25 the nature or spirit thereof.

What I claim is—

1. The combination, with the ash-hopper of a water-seal gas-producer, of a blast-box hav-

ing a closed top and sides, provided with out- 30 takes for the passage of air in the bottom thereof, the said box being arranged in the hopper with the portion of the box provided with the air-outtakes submerged in the water of the seal. 35

2. The combination, with the ash-hopper of a water-seal gas-producer, of a blast-box having a closed top and sides provided in its lower part with open-bottom outtake-cells for the passage of air, the said box being arranged in  
40 the hopper with the lower portion of the said cells submerged in the water of the seal.

3. A blast-box having a closed top and sides for water-seal gas-producers, provided in its bottom or lower part with open-bottom out- 45 take-cells for the passage of air.

4. A blast-box for water-seal gas-producers, provided in its bottom or lower part with open-bottom outtake-cells for the passage of air, the top of the blast-box being closed and sub- 50 stantially dome-shaped in cross-section.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM H. HOLCROFT.

Witnesses:

JOHN H. MIRKIL,  
MARY F. HUMBERT.