F. G. HOBART.

WATER SEALED PRODUCER VALVE.

APPLICATION FILED OCT. 27, 1909.

967,919.

Patented Aug. 23, 1910.

2 SHEETS—SHEET 1.

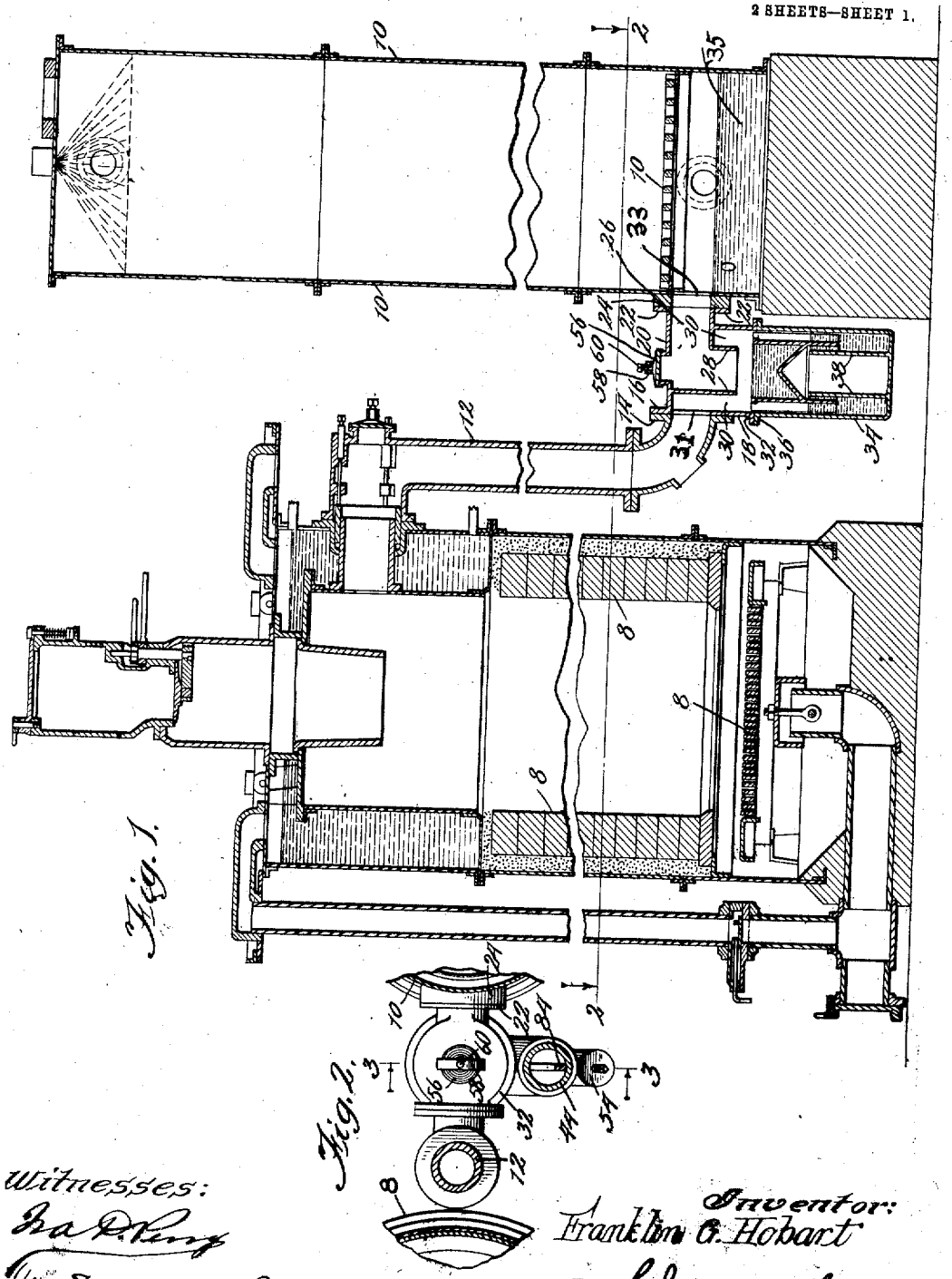

Fig. 1.

Fig. 2.

Witnesses:

Ira D. King

G. W. Demarus Jr.

Inventor:

Franklin G. Hobart

By Cheever & Cox

Attys

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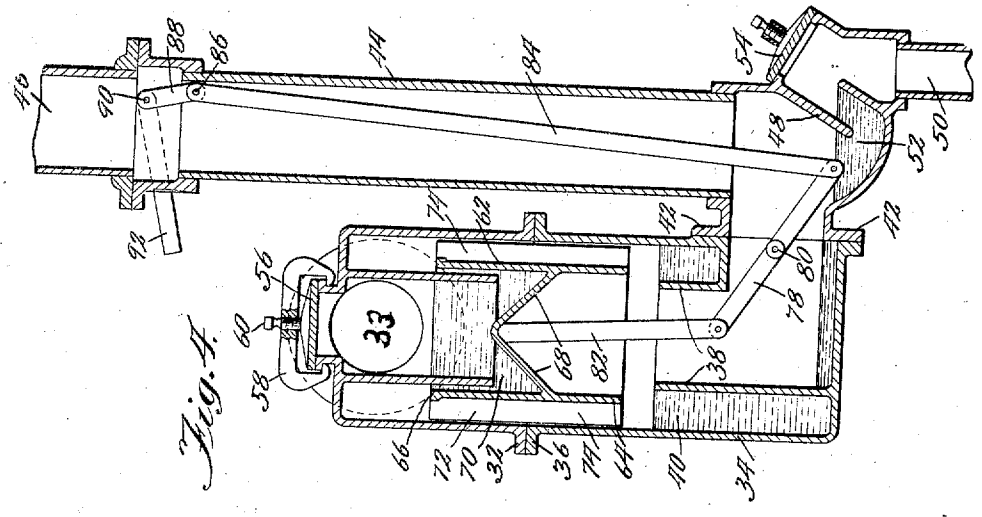

Fig. 4.

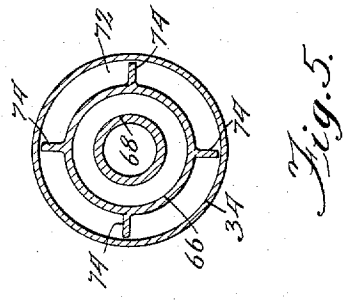

Fig. 5.

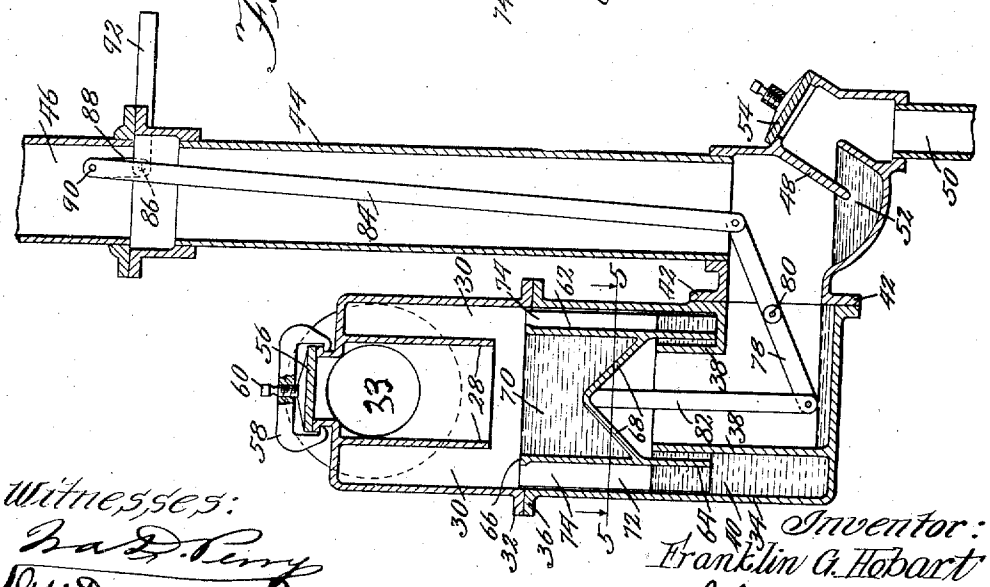

Fig. 3.

Witnesses:

D. V. Domarus Jr.

Inventor:

Franklin G. Hobart

By Cheever & Cox

Attys.

UNITED STATES PATENT OFFICE.

FRANKLIN G. HOBART, OF BELOIT, WISCONSIN, ASSIGNOR TO FAIRBANKS, MORSE AND COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

WATER-SEALED PRODUCER-VALVE.

967,919. Specification of Letters Patent. Patented Aug. 23, 1910.

Application filed October 27, 1909. Serial No. 524,870.

To all whom it may concern:

Be it known that I, FRANKLIN G. HOBART, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented a certain new and useful Improvement in Water-Sealed Producer-Valves, of which the following is a specification.

This invention relates to liquid sealed valves for use in the pipe connecting the producer and scrubber of an ordinary gas plant, particularly where such valve is designed, to operate at the will of the operator, to permit the gas to pass from the producer into the scrubber or into the open air, as desired. Valves of various kinds including water sealed valves having been used to accomplish this purpose.

The object of this invention is to provide a much better form of water sealed valve than has heretofore been used at the point indicated.

The invention consists; in a valve for the purpose named so constructed and located with reference to the other parts of the device between which it is connected that the valve itself is continually supplied with the waste water from one of the devices to which it is connected thereby doing away with the necessity of an independent water supply therefor and always insuring the proper operation of the valve; in novel means for operating the valve from outside the device and in the peculiar location of the operating means; in the use of the form and arrangement of valve shown to act as a trap for the discharge of water from the scrubber to a sewer or the like so as to prevent return of either water or gas.

The invention also consists in particular details of construction adapted to bring about the general results desired and in other features which will be more fully pointed out as the specification proceeds.

Referring to the drawings, Figure 1 is a vertical sectional center view through a gas plant of the type described to which the device of this invention is applied. Fig. 2 is a plan view of the valve and portions of the adjacent walls of the producer and scrubber taken on line 2—2, Fig. 1. Fig. 3 is a sectional vertical detail view on the line 3—3, Fig. 2 showing the valve of this invention in one extreme position and Fig. 4 shows the same parts of the valve moved to the opposite extreme position. Fig. 5 is a sectional plan view on the line 5—5, of Fig. 4.

The parts at the left hand half of Fig. 1 designated by the numeral 8 represent a gas producer of the ordinary type while similarly the parts occupying most of the right hand half of this figure and carrying the numeral 10 represent a scrubber of the type well known in the art for use in connection with the producer 8, the producer and scrubber being connected together by some sort of a pipe such as 12 through which the gas made by the producer 8 passes to the scrubber 10 for the purpose of being cleaned. In this pipe 12 the valve device of this invention is located, the preferred form being shown. In mounting the valve in this pipe 12 said pipe is provided with a flange 14 connected by any suitable means to the flange 16 on upper portion of the wall 18 of the upper casing 20, while at the opposite end of this upper casing 20 is a flange 22 connected by any suitable means to the flange 24 on the scrubber. This upper casing 20 is provided with an internal pipe 26 having the downwardly turned orifice or end 28 around which is an annular space 30, usually, but not necessarily of circular cross section, as shown. The orifice 31 opening into pipe 12 is considerably above the lower end of the pipe 28. The orifice 33 leading from pipe 26 to the waste water compartment 35 of the scrubber 10 is also above the lower end of pipe 28. The result of this latter construction is that water from compartment 35 flows continuously into pipe 28 and out of its downward turned end. This upper section 20 of the valve casing is provided with a horizontal flange 32 to which the lower valve casing 34 is attached by means of the flange 36 and any suitable connectors. On the inside of this lower casing member 34 is a vertical tubular member 38 of approximately the same diameter as the member 28 and around this tubular member 38 and between it and the exterior casing 34 is an annular space 40. The interior of this pipe 38 is connected by means of the flanges 42 to a pipe 44 open at its upper end 46 to the open air. This pipe 44 also has at its lower end a water sealed check valve 48 of ordinary construction leading to the pipe 50 through which any surplus water in the water space 52 may escape. The valve 48 and the pipe

50 are accessible by means of a removable hand plate 54. Similarly the interior of the upper portion of the casing and the pipe 28 may be inspected by removing the cover plate 56 detachably held in place, as shown in Figs. 2 and 4 by means of the sealing bar 58 and set screw 60.

Interposed between the members 28 and 38 and within the casing, as shown, is the valve member proper 62 preferably of cylindrical form having its lower end 64 adapted to inclose the cylindrical pipe member 38 when the valve is in the position of Fig. 3 and its upper end 66 adapted to inclose the downwardly turned pipe member 28 when the valve is moved to the position of Fig. 4. Across the interior of this valve member 62 at approximately its middle is an imperforate bottom 68 with the result that a receptacle 70 for water or other liquid is formed within the valve member 62. Attention is here particularly called to the fact that this water receptacle 70 being below the downwardly turned orifice of pipe 28, through which waste water coming from the scrubber waste chamber 35 passes, and water always being present in said chamber 35 and in pipe 26, this receptacle 70 is always kept full of water with the result that when the valve is moved to the position of Fig. 4 it absolutely seals the lower end of the pipe 28 and prevents the discharge of gas from the producer to the scrubber and this is done without the aid of an external water supply and pipe therefor as has been the practice heretofore. While in this position the water coming from the pipe 28 passes down through the annular space 72 between the cylindrical member 62 and its guiding flanges 74, (provided simply to insure the proper vertical movement of the valve) and thus fills up the annular space 40 from which the overflow always passes into the pipe 38, and thence through the valve 48 to the pipe 50. When the parts are in the position of Fig. 4 the gas passes through pipes 12, 72, 38 and 44 and thence out of its end 46 to the open air. The valve member 62 may be lifted and lowered by any suitable means, one form here shown consisting in a lever 78 pivoted at 80, having one end connected to a rod 82 attached to the bottom 68 of water receptacle 70, and the other end of said lever being connected by the rod 84 and crank pin 86, to a crank arm 88 pivoted at 90 and operated by a lever handle 92. Rotating this handle 92 (which is located outside of the pipe 44, the remaining connections being within the pipe 44 and passageway 38) from the position of Fig. 3 to that of Fig. 4 and back again moves the parts as and for the purposes set forth. When the parts are moved from the position of Fig. 4 to that of Fig. 3 the gas entering from pipe 12 through orifice 31 passes into pipe 28 and out of opening 33 into the scrubber but during this operation water is still flowing from the scrubber first into receptacle 70, then into annular space 40 from which it passes between parts 64 and 38 into pipe 38 and thence out through pipe 50 as before.

Having thus described my in ention what I claim as new and desire to secure by Letters Patent is:—

1. In a device of the class described the combination of a gas producer, a scrubber, a pipe connecting them, a valve casing mounted in said pipe, a valve in the casing constructed to move from a position in which it passes gas from the producer to the scrubber, to a position in which it excludes the gas from the scrubber and passes it out of another opening in the casing, said valve being also constructed to receive and pass waste water from the scrubber through the valve in all of its positions, the water in so doing serving as a seal for the valve for the purposes set forth.

2. In a device of the class described the combination of a gas producer and scrubber therefor, a pipe connecting them, a valve casing mounted in said pipe, a valve within said casing movable to two different positions, in one position admitting gas from the producer to the scrubber and in the other position shutting off the gas from the scrubber and admitting it to a discharge opening within the casing, a source of waste water within the scrubber so located that it passes continuously through the valve casing and through parts of the valve so constructed as to seal the valve and then passes continuously out from the last mentioned discharge opening and a supplemental trap adjacent to said last mentioned discharge opening and connected to a waste pipe or sewer adapted to pass said water therethrough without permitting the return of gas for the purposes set forth.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

FRANKLIN G. HOBART.

Witnesses:
A. B. GARDNER,
GEO. McDONALD.