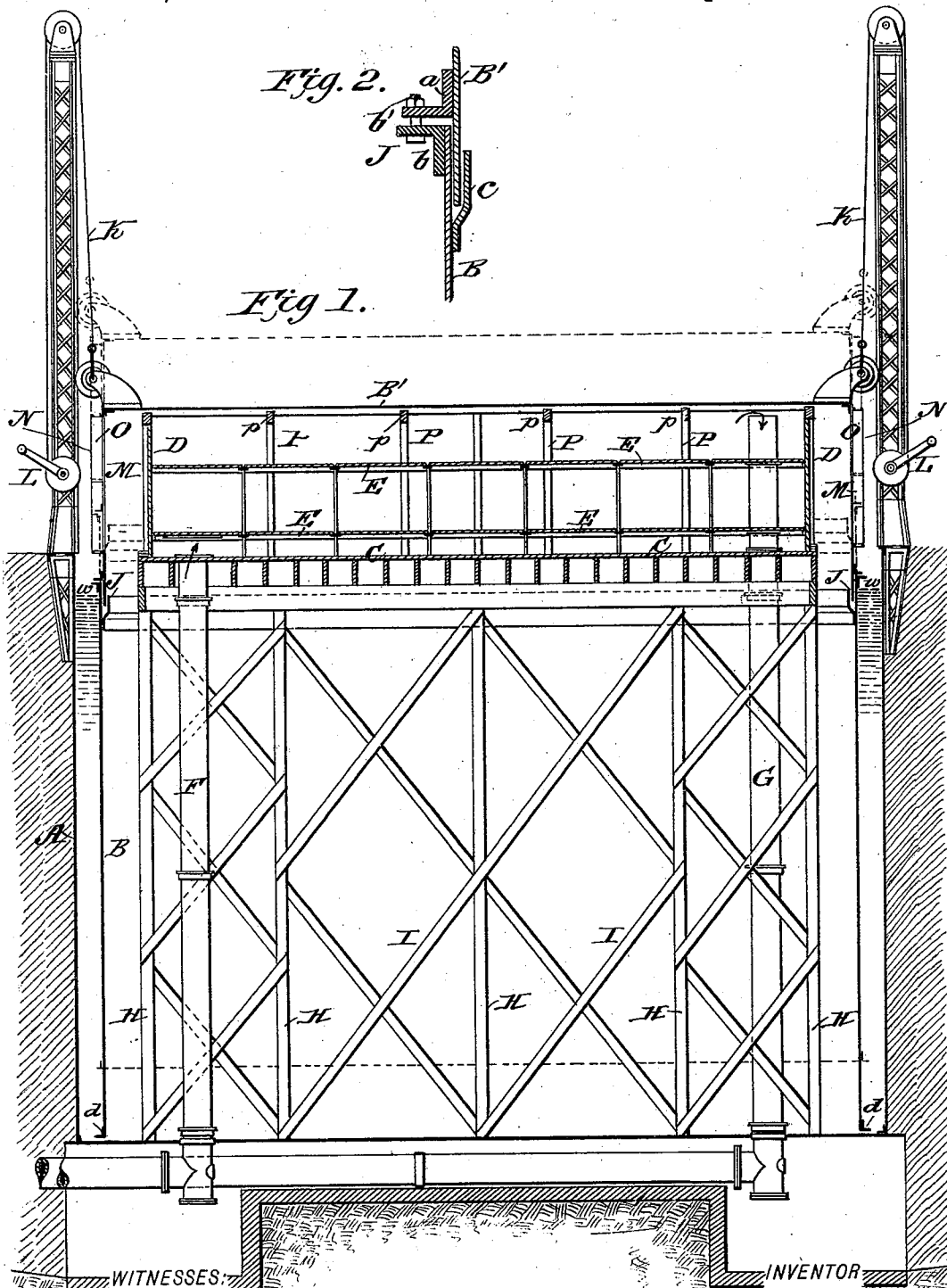


(No Model.)

D. McDONALD.  
GAS HOLDER AND PURIFIER.

No. 518,114.

Patented Apr. 10, 1894.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

DONALD McDONALD, OF LOUISVILLE, KENTUCKY.

## GAS HOLDER AND PURIFIER.

SPECIFICATION forming part of Letters Patent No. 518,114, dated April 10, 1894.

Application filed January 8, 1894. Serial No. 496,069. (No model.)

*To all whom it may concern:*

Be it known that I, DONALD McDONALD, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Gas Holders and Purifiers, of which the following is a specification.

In ordinary gas works the gas holders are usually very large and the purifiers relatively small, but in fuel-gas works it is impossible to provide sufficient storage, and it therefore becomes necessary to provide very large generating capacity, and a purifying device large enough to purify this large volume of gas as fast as it is made.

My invention is designed to provide a combined gas purifier and holder which shall attain this object, in a simple and practical way, and with the greatest economy of space, which I will now proceed to describe with reference to the drawings, in which—

Figure 1 is a section through an ordinary circular gas holder constructed in accordance with my invention, and Fig. 2 is a detail of the water seal by which the top section of the gas holder is joined to the bottom section.

On the drawings similar letters indicate like parts.

A is a seal tank filled with water, which tank may be built either of steel on top of the ground, or of brick work or concrete in the ground, in the same manner that seal tanks are made for ordinary gas holders.

B B' is an inverted tank floating in A, constructed in the same manner that the lifts of ordinary gas holders are constructed, except that when it rests on the bottom of the seal tank, as at *d*, the top, instead of coming down to the water line, comes about five or six feet above the water line. It also differs from the lift of the ordinary gas holder in that means are provided for entering it in order to put in and take out the purifying material, as will be hereinafter described.

C is an air tight floor sustained in a fixed position by posts and braces I in the upper part of the receiving tank B B'. The top of the floor comes a few inches above the water line *w*, and D is a gas tight wall running clear around the top of C and running up to and partially supporting the crown B' of the receiving tank when the latter is in its lowest position.

E and E are wooden trays which carry the purifying material. They are placed on the floor C, and come up against the walls D on all sides. Gas is delivered under the layer of trays E, through the inlet pipe F, and after finding its way through the purifying material carried on the trays E E, it flows out of the holder again through the outlet pipe G.

When the gas is flowing through the purifier, its pressure raises the tank B B', as shown in dotted lines, thus making it serve as a gas holder.

The floor C supported by posts H, H does not move with the tank B B', but remains stationary with its wall D and trays E. Two or more of these holders are placed together with a center valve in the same manner that ordinary purifiers are placed, and they are used alternately, one being thrown out of service while another is thrown into service, in exactly the same way as is done with ordinary purifiers in gas works.

When the purifying material has become foul, and it is time to remove it and substitute fresh material, the operation is performed in either of two ways. First, by taking off the top of the receiving tank B B' at the joint J, and lifting it up by the ropes K which wind on the windlasses L L; or the joint J may be left closed and an entrance effected through the doors M, M. These doors are cut in opposite sides of the tank and suitable arrangement made for reaching them with wheel-barrows or trucks. They are large enough to admit a man with a wheel-barrow, and are closed securely by bolting the plate N to the channel iron O by means of bolts placed close together, the joint being made tight by suitable gaskets.

The joint J is shown in detail in Fig. 2, in which *a* is an angle iron running entirely around the bottom part of the top section B' of the holder, and *b* is a similar angle iron running around the top edge bottom section B of the holder. *c* is an off-set plate riveted to the lower section B of the holder on the inside in such a way as to form an annular trough or water seal into which the lower edge of the top part of the holder dips.

The angle irons *a* and *b* are held together with bolts *b'* through their flanges, so that when the gas raises the top part of the tank,

the pull on the bolts will draw up the bottom after it, the joint between the two being made gas tight by the water held in the seal formed by the angle plate *c*.

- 5 P, P are posts standing on the floor C and carrying the bars which support the trays E, E. These posts also run up and are capped by stringers *p* which support the crown of the holder B' when it is empty and resting on the  
10 bottom edges at *d*.

What I claim as new, and wish to secure by Letters Patent, is—

1. A combined gas holder and purifier consisting of a water seal tank or reservoir A  
15 having within the same a supporting frame work carrying on its upper side a stationary floor C arranged above the level of the water in the tank, a vertically adjustable and balanced receiver made deeper vertically than the  
20 tank and extending a considerable distance above the level of the floor at all times and having doors M in its sides opening above the level of the said floor, and purifying boxes or trays arranged on said floor and adapted to  
25 be reached by wheel barrows through said doors and across said floor substantially as shown and described.

2. A combined gas holder and purifier consisting of a water seal tank or reservoir A  
30 having within the same a supporting frame work carrying at its upper side a stationary

floor C arranged above the level of the water in the tank, a vertically adjustable and balanced receiver B B' made in two sections connected detachably at J, the upper section B' 35 being substantially above the floor at all times and having side doors M, and purifying boxes or trays arranged upon the floor and adapted to be reached by wheel barrows across said floor substantially as shown and described. 40

3. A combined gas holder and purifier, consisting of a water seal tank A having within the same a supporting frame work carrying at its upper side a stationary floor C arranged above the level of the water in the tank, a 45 vertically adjustable and balanced receiver made deeper vertically than the tank, and extending a considerable distance above the level of the floor at all times, and having an opening in the upper part of the same, purifying boxes or trays arranged upon said floor 50 and adapted to be reached by wheel barrows across said floor, an inlet pipe F opening into the receiver on a level with the floor, and the outlet pipe G opening into the receiver above 55 the purifying boxes substantially as and for the purpose described.

DONALD McDONALD.

Witnesses:

THOS. W. KENNEDY,  
WM. H. CRUTCHER.