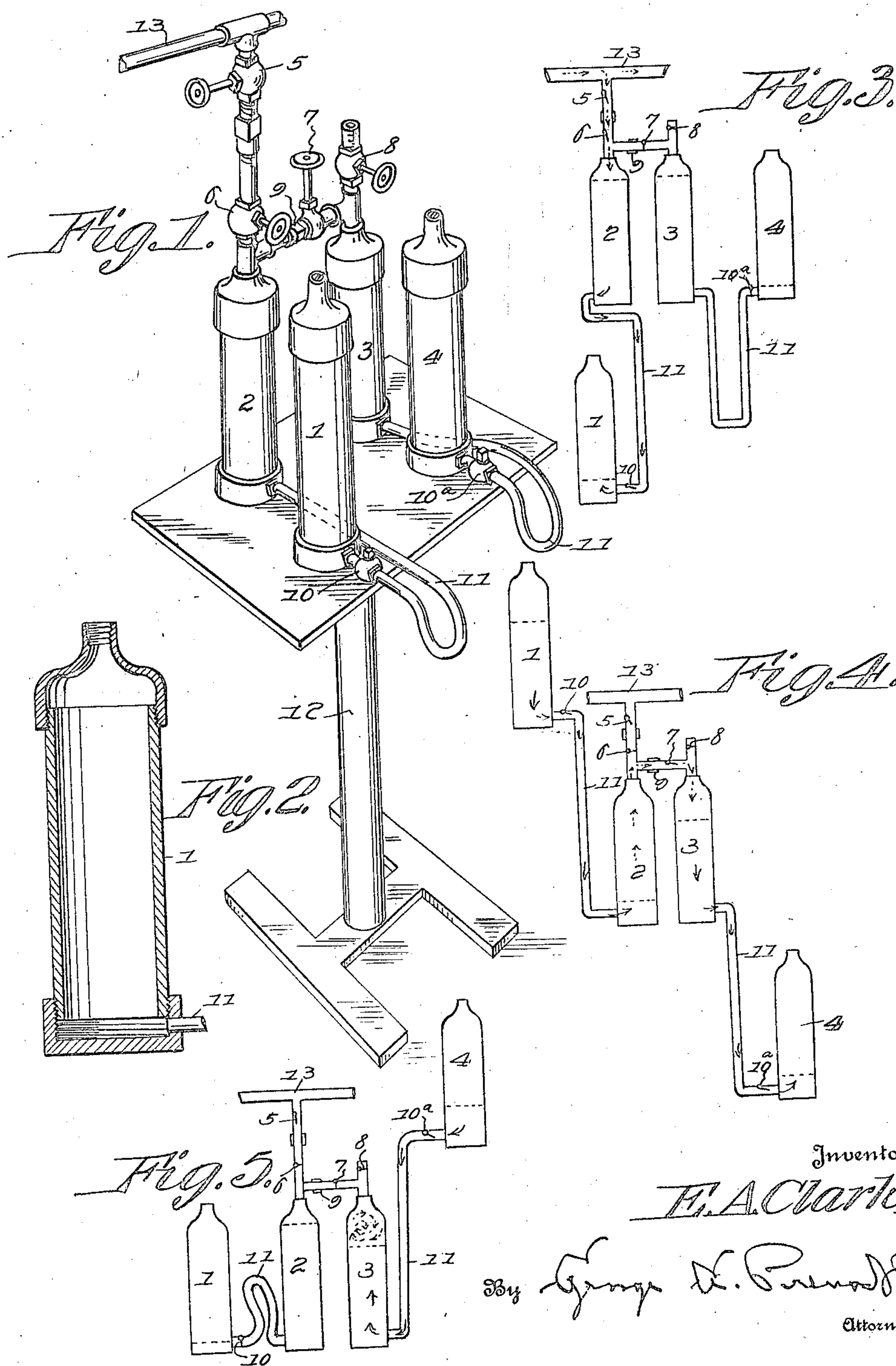


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E. A. CLARK.  
GAS SAMPLING DEVICE.  
FILED FEB. 18, 1921.



Inventor

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## UNITED STATES PATENT OFFICE.

EARLE A. CLARK, OF TULSA, OKLAHOMA.

## GAS-SAMPLING DEVICE.

Application filed February 18, 1921. Serial No. 446,159.

*To all whom it may concern:*

Be it known that I, EARLE A. CLARK, a citizen of the United States, residing at Tulsa, in the county of Tulsa and State of Oklahoma, have invented certain new and useful Improvements in Gas-Sampling Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in gas samplers, its object being to secure a sample of gas from a pipe line or other container in which the gas is under a pressure less than that of the atmosphere, or in other words, to secure a sample of gas where the line or container is under a vacuum.

With the above mentioned object and other objects in view, which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawing and more particularly pointed out in the appended claims.

Referring to the drawing:—

Fig. 1 is a perspective view of the device showing the receptacles, valves, connections and stand.

Fig. 2 is a cross sectional view of one of the receptacles.

Figs. 3, 4 and 5 are diagrammatic views showing the operation of the device, which will be clearly understood from the following description.

In the drawings 1, 2, 3 and 4 represent receptacles into two of which the gas sample is to be drawn. 5 is a valve cutting off the connection between the gas line 13, and the receptacles. 6 and 8 are valves on the receptacles and 7 is a valve between the two receptacles 2 and 3. 9 is a union or connection which enables the operator to detach receptacles 3 and 4 from receptacles 1 and 2 after the sample is secured. 10 and 10<sup>a</sup> are valves or stop cocks at the bottoms of the receptacles 1 and 4, which control the flow of a liquid such as mercury through the flexible tubes 11 connecting the receptacles, and 12 is the stand upon which the receptacles are supported.

To operate the device, the receptacles 1, 2, 3 and 4 are placed on the stand 12, 2 and 3 being filled with liquid, preferably mercury. The receptacle 2 is connected at the top through the medium of the valve 5, to gas line 13, which, as has been stated, is under a vacuum, and the valves 6, 7 and 8 and cocks 10 and 10<sup>a</sup> are closed.

The valve 6 and cock 10 are opened and, as shown in Fig. 3, receptacle 1 is lowered, thereby permitting the liquid, such as mercury, in the receptacle 2 to flow by gravity into the receptacle 1, which causes a suction of gas from the pipe line 13 into the receptacle 2. The valve 6 is then closed and valve 7 and cock 10<sup>a</sup> are opened and as shown in Fig. 4, receptacle 1 is again raised and receptacle 4 lowered when the mercury in receptacle 1 flowing back into receptacle 2, will push the sample of gas into receptacle 3, at the same time forcing the mercury from the latter into receptacle 4. Valve 7 is then closed and 6 is opened again and a further supply of gas obtained in the same manner. This procedure is continued until receptacle 3 contains a desired sample of gas at whatever pressure the operator wishes to use for his experiments. The greater number of times receptacle 2 is filled and forced into receptacle 3, the greater the pressure of the gas in receptacle 3 will be. The pressure in 3 may also be increased by raising receptacle 4 when the valve 7 is closed, thus forcing the mercury back into receptacle 3 and compressing the gas as shown in Fig. 5.

As soon as the desired sample has been collected, the stop cock 10<sup>a</sup> is closed and the receptacles 3 and 4 may be separated from receptacles 1 and 2 through the medium of the union 9 and the receptacle containing the sample removed to the laboratory for analysis, or for whatever experiments are to be performed. The valve 8 on receptacle 3 is simply for use in the laboratory, when the sample is to be taken from the receptacle.

While I have described my invention as being particularly adapted for taking samples of gas from a pipe line or other container, in which the gas is under a pressure less than that of the atmosphere, it is ob-



vious that my improved gas sampler may be used to obtain samples of gas from a pipe line or other container where the gas is held under a pressure, greater than that of the atmosphere.

What I claim and desire to secure by Letters Patent is:—

1. A gas sampling device comprising two pairs of receptacles, flexible connections between each of said pairs, a connection between the two pairs, two of said receptacles containing liquid, and means for creating a suction in two of said receptacles by permitting the liquid to flow into the other two.

2. A device as claimed in claim 1 in which

the two pairs of receptacles are detachably connected.

3. A device as claimed in claim 1 in which the liquid in the two receptacles includes mercury.

4. A device as claimed in claim 1, in which the liquid is caused to flow from the receptacles containing same by gravity.

5. A device as claimed in claim 1 including means for finally forcing the gas into one of the receptacles and compressing the same.

In testimony whereof I affix my signature.

EARLE A. CLARK.