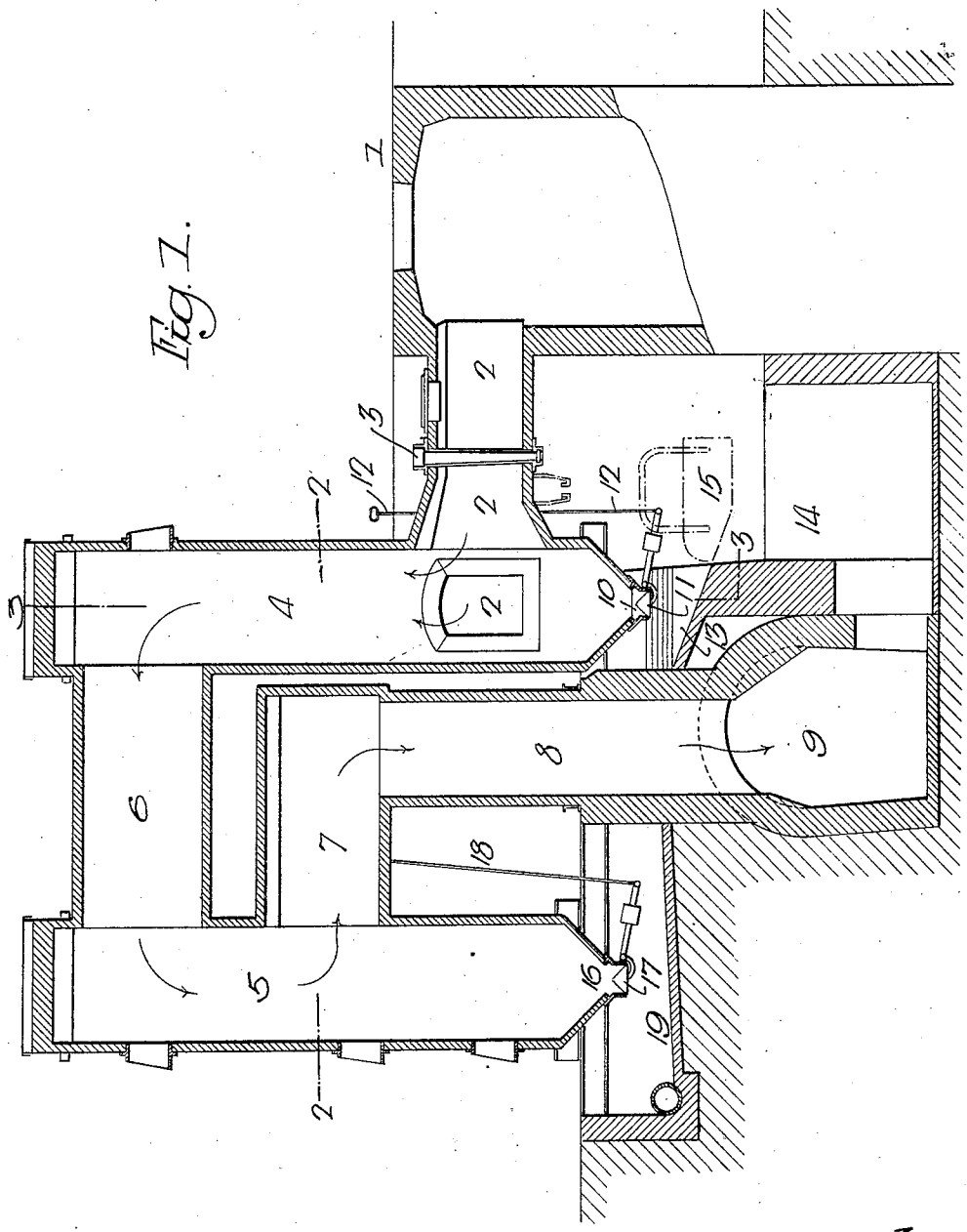
June 9, 1925. 1,541,650

J. H. MATHESON

GAS EQUALIZER AND SOOT COLLECTOR FOR GAS PRODUCERS

Filed Nov. 28, 1921 5 Sheets-Sheet 1

Fig. 1.



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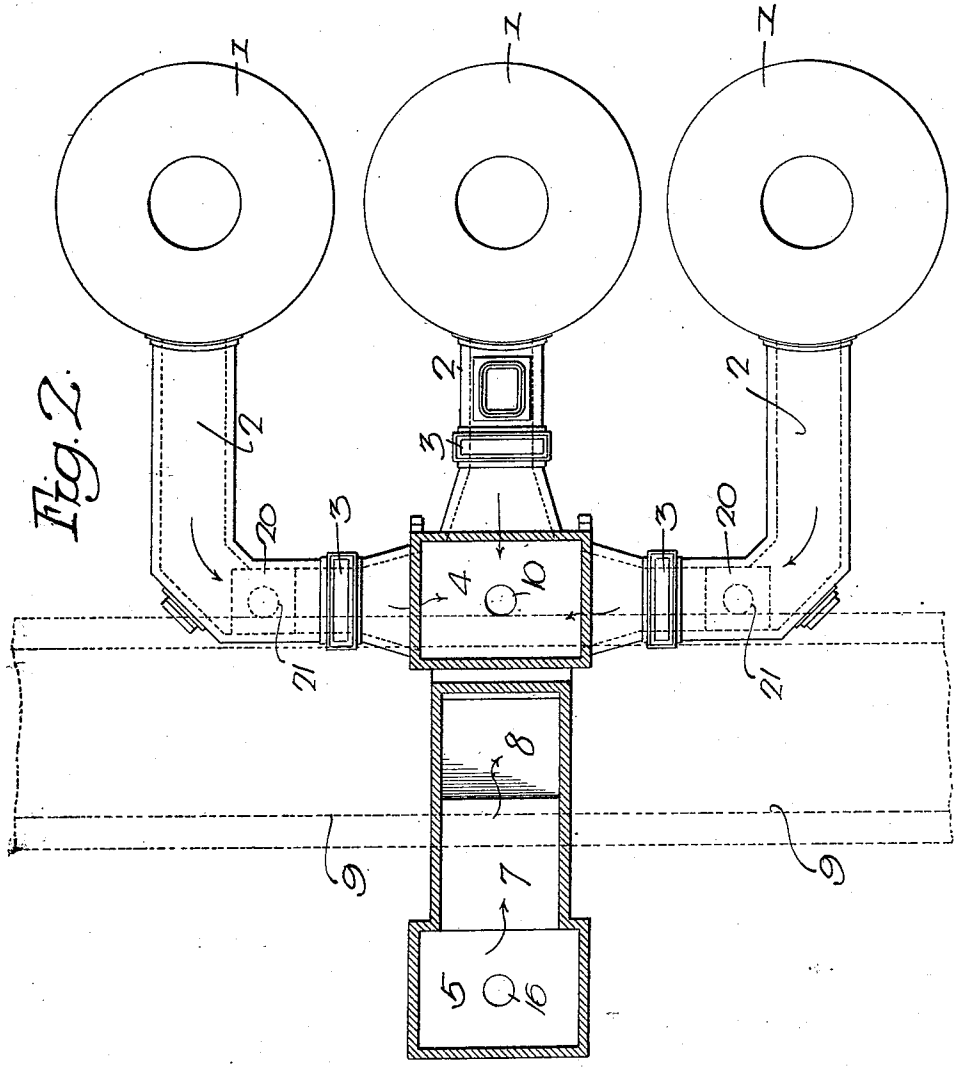
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Fig. 2.



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GAS EQUALIZER AND SOOT COLLECTOR FOR GAS PRODUCERS

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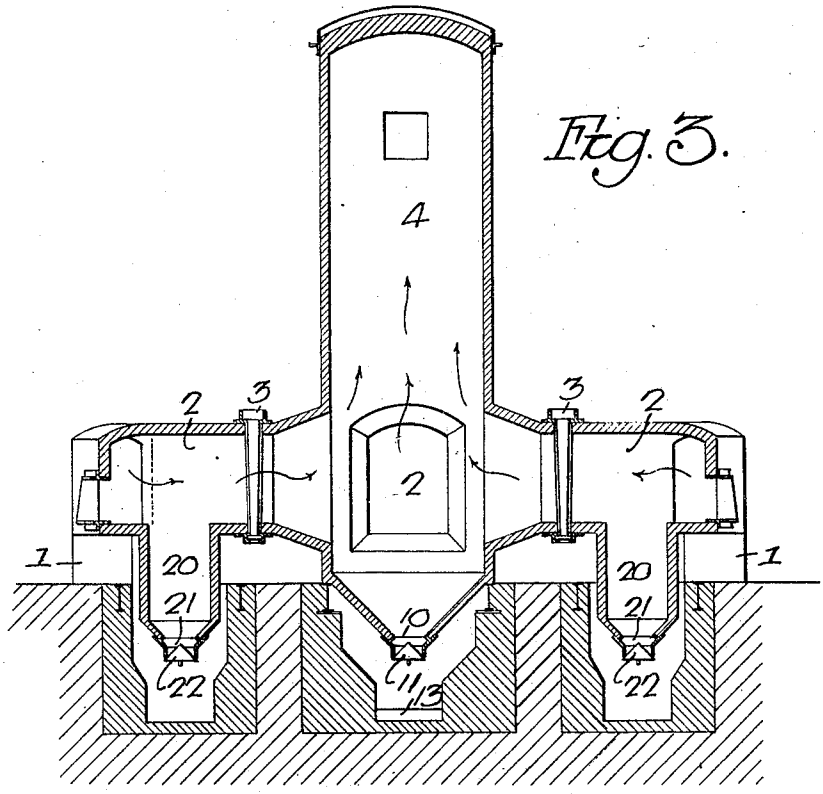


Fig. 3.

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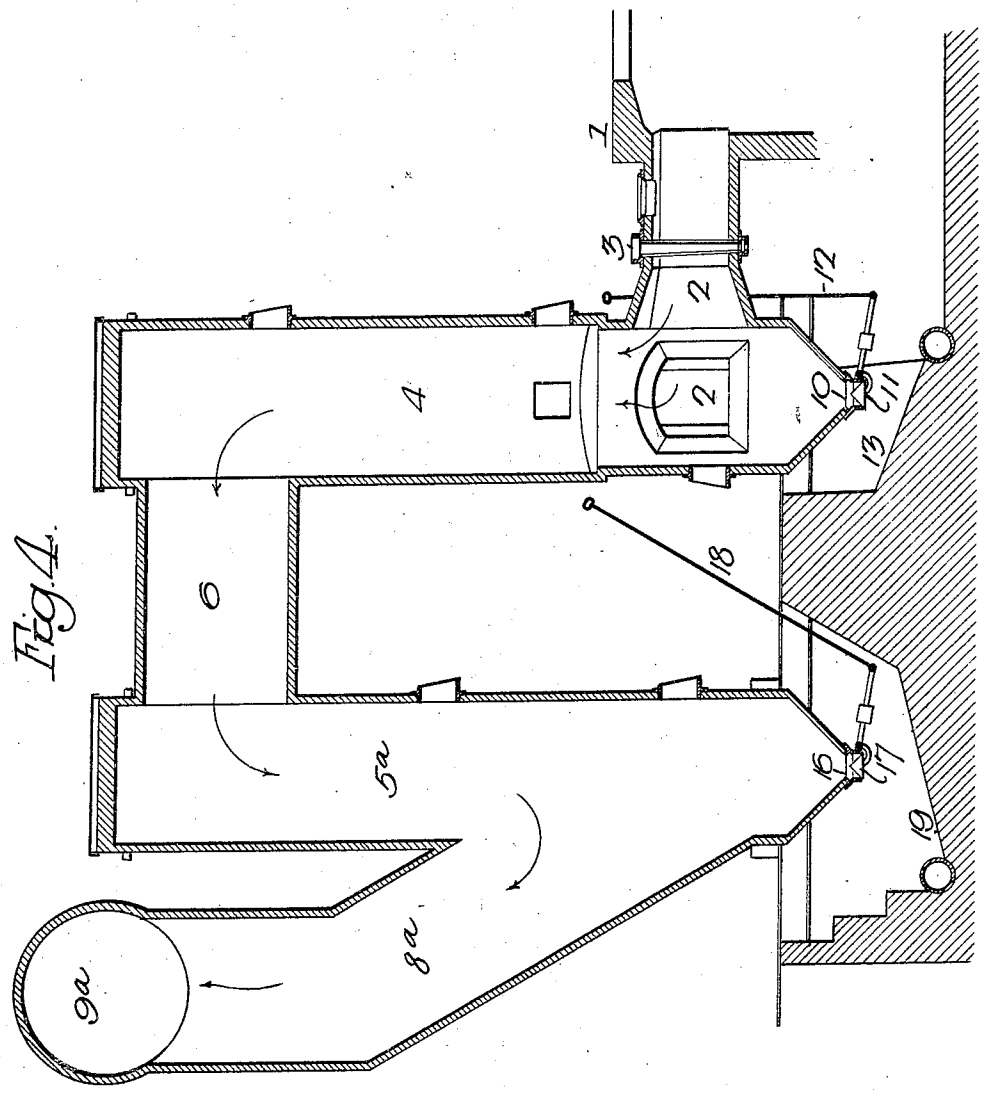


Fig. 4.

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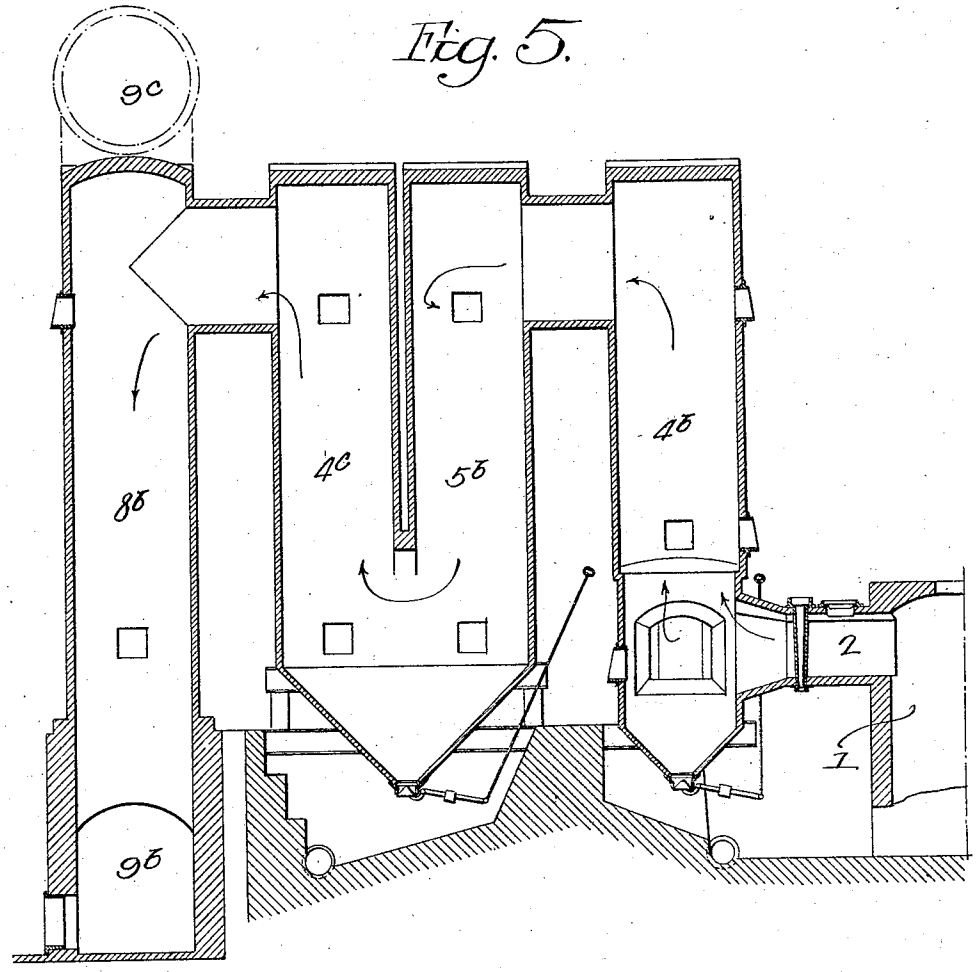
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GAS EQUALIZER AND SOOT COLLECTOR FOR GAS PRODUCERS

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Fig. 5.



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UNITED STATES PATENT OFFICE.

JAMES H. MATHESON, OF READING, PENNSYLVANIA.

GAS EQUALIZER AND SOOT COLLECTOR FOR GAS PRODUCERS.

Application filed November 28, 1921. Serial No. 518,195.

To all whom it may concern:

Be it known that I, JAMES H. MATHESON, a citizen of the United States, residing in Reading, Pennsylvania, have invented certain Improvements in Gas Equalizers and Soot Collectors for Gas Producers, of which the following is a specification.

One object of my invention is to provide means for collecting the soot that separates from the gas as the gas passes from a producer to the main flue leading from a series of producers.

A further object of the invention is to provide means for equalizing, or averaging, the gas, from a series of producers.

In the accompanying drawings:

Fig. 1 is a sectional elevation illustrating my improved gas equalizer and soot collector for gas producers;

Fig. 2 is a sectional plan view on the line 2—2, Fig. 1;

Fig. 3 is a sectional elevation on the line 3—3, Fig. 1; and

Figs. 4 and 5 are views illustrating modifications of the invention.

Referring to the drawings, 1 is a series of gas producers of any of the ordinary types. 2 is a passage leading from each producer. In each passage is a valve 3 of the usual form. 4 is an uptake flue with which the several passages 2 communicate near the bottom, as shown in Fig. 1. 5 is the downtake flue, which connects with the upper end of the uptake flue by means of a horizontal flue 6. Communicating with the downtake flue is a flue 7, which communicates with a vertical flue 8 leading to the main flue 9. In Fig. 1, this flue is shown below the ground level. The lower portion of the uptake flue 4 forms a soot pocket in which is an opening 10 for the discharge of soot. This opening is closed by a valve 11 actuated by a rod 12. The bottom of the flue is preferably tapered towards this opening so that, when the valve is opened, the soot will flow from the bottom of the flue onto the inclined way 13 and into a pit 14.

When a traveling bucket 15 is used, as shown by dotted lines in Fig. 1, the bucket can be so located in respect to the inclined way that the soot will flow directly into the bucket. The lower end of the downtake flue 5 forms a soot pocket in which is an opening 16, similar to the opening in the uptake flue. This opening is closed by a valve 17 operated by a rod 18. The bottom of the flue is beveled towards the opening. When the valve is open, the soot passes through the opening 16 and collects on a floor 19. Each side passage 2 has a soot pocket 20 in the present instance. The bottom of each pocket is beveled towards an opening 21. Each opening is closed by a hand operated valve 22, similar in construction to the valve 11.

The uptake flue 4 and the downtake flue 5 are preferably rectangular in cross section to provide broad and flat surfaces against which the gas impinges as it passes through the flues, thus more readily separating the soot from the gas and thoroughly mixing the gas.

By the above construction, the gas, as it travels through the producers and through the several flues, separates from the soot, which falls into the pockets. When sufficient soot has collected in the pockets, the valves are opened so as to discharge the soot from the pockets. By having the extended uptake flue 4 and the extended downtake flue 5, the separation of the soot from the gas is assured, and the gas, when it reaches the main flue 9, is comparatively free of soot so that the cleaning of the main flue is obviated.

In Fig. 4, a modification is illustrated in which the main flue 9^a is above the ground level and the passage 8^a, which communicates with said flue, also communicates with the lower portion of the downtake flue 5^a. Otherwise the construction is the same as that previously described.

Fig. 5 illustrates a modification, in which there are two uptake flues 4^b and 4^c and a downtake flue 5^b. The flues 5^b and 4^c are located close together and are connected at the lower end directly above a soot pocket, which is common to both flues. The uptake flue 4^c is connected at the top with a vertical passage 8^b, which leads directly to the main underground flue 9^b, or with an overhead main flue 9^c shown by dotted lines.

By constructing the soot collector in the manner hereinbefore described, the gas of the several producers can be averaged so as to provide a uniform quality of gas throughout the day, and, consequently, a much better quality of gas can be produced.

For instance, when one producer of a series is making lean gas and another pro-

ducer is making very rich gas, and the other producers are making a medium gas, the gas from the several producers becomes thoroughly mixed while traveling through the uptake and downtake flues so that when the gas reaches the main flue it will be uniform in quality.

While a series of producers connected with the soot collector is illustrated in the drawings, it will be understood that I do not wish to be limited to this number, as any number may be provided.

By locating the valves, as indicated in Fig. 2 of the drawings, any one of the producers may be cut off temporarily from the soot collector.

I claim:

1. The combination in a soot collector for gas producing apparatus; of extended vertical uptake and downtake flues both closed at the top; a short horizontal flue connecting the upper ends of the said uptake and downtake flues; a horizontal gas supply duct connected to the uptake flue between its ends; a horizontal gas discharge duct located vertically below the aforesaid horizontal connecting flue and connected with the downtake flue between its ends; a vertical gas discharge duct located between the uptake and downtake flues and connected at its upper end with the horizontal discharge duct; and valved soot pockets at the lower ends of the said uptake and downtake flues.

2. The combination in a soot collector for gas producing apparatus; of extended vertical uptake and downtake flues connected together at their upper ends; valved soot pockets at the lower ends of the said flues; a gas discharge duct connected with the downtake flue between its ends; and a plurality of horizontal gas supply ducts connected to the uptake flue between its ends, the said supply ducts being at the same level and meeting the uptake flue from different directions, whereby gases from the different ducts are brought into contact to augment the precipitation of soot into the corresponding pocket and to assist in the mixing the gases.

3. The combination in a soot collector for gas producing apparatus; of extended vertical uptake and downtake flues connected together at their upper ends; valved soot pockets at the lower ends of the said flues; a gas discharge duct connected with the downtake flue between its ends; and three horizontal gas supply ducts connected to the uptake flue between its ends, the said supply ducts being at the same level and having their axes approximately intersecting each other and approximately intersecting the axis of the uptake flue, whereby gases from the different ducts are brought into contact to augment the precipitation of soot into the corresponding pocket and to assist in the mixing the gases.

4. The combination in a soot collector for gas producing apparatus; of extended vertical uptake and downtake flues connected together at their upper ends; valved soot pockets at the lower ends of the said flues; a gas discharge duct connected with the downtake flue between its ends; a plurality of horizontal gas supply ducts connected to the uptake flue between its ends; and valved soot pockets in some of the said supply ducts.

5. The combination in a soot collector for gas producing apparatus; of extended vertical uptake and downtake flues connected together at their upper ends; valved soot pockets at the lower ends of the said flues; a gas discharge duct connected with the downtake flue between its ends; a plurality of horizontal gas supply ducts connected to the uptake flue between its ends, the said supply ducts being at the same level and meeting the uptake flue from different directions, whereby gases from the different ducts are brought into contact to augment the precipitation of soot into the corresponding pocket and to assist in the mixing the gases; and valved soot pockets in some of the said supply ducts.

JAMES H. MATHESON.