Dec. 11, 1934. A. C. WOLFE 1,983,687

GAS PRODUCER

Filed May 25, 1932 2 Sheets-Sheet 1

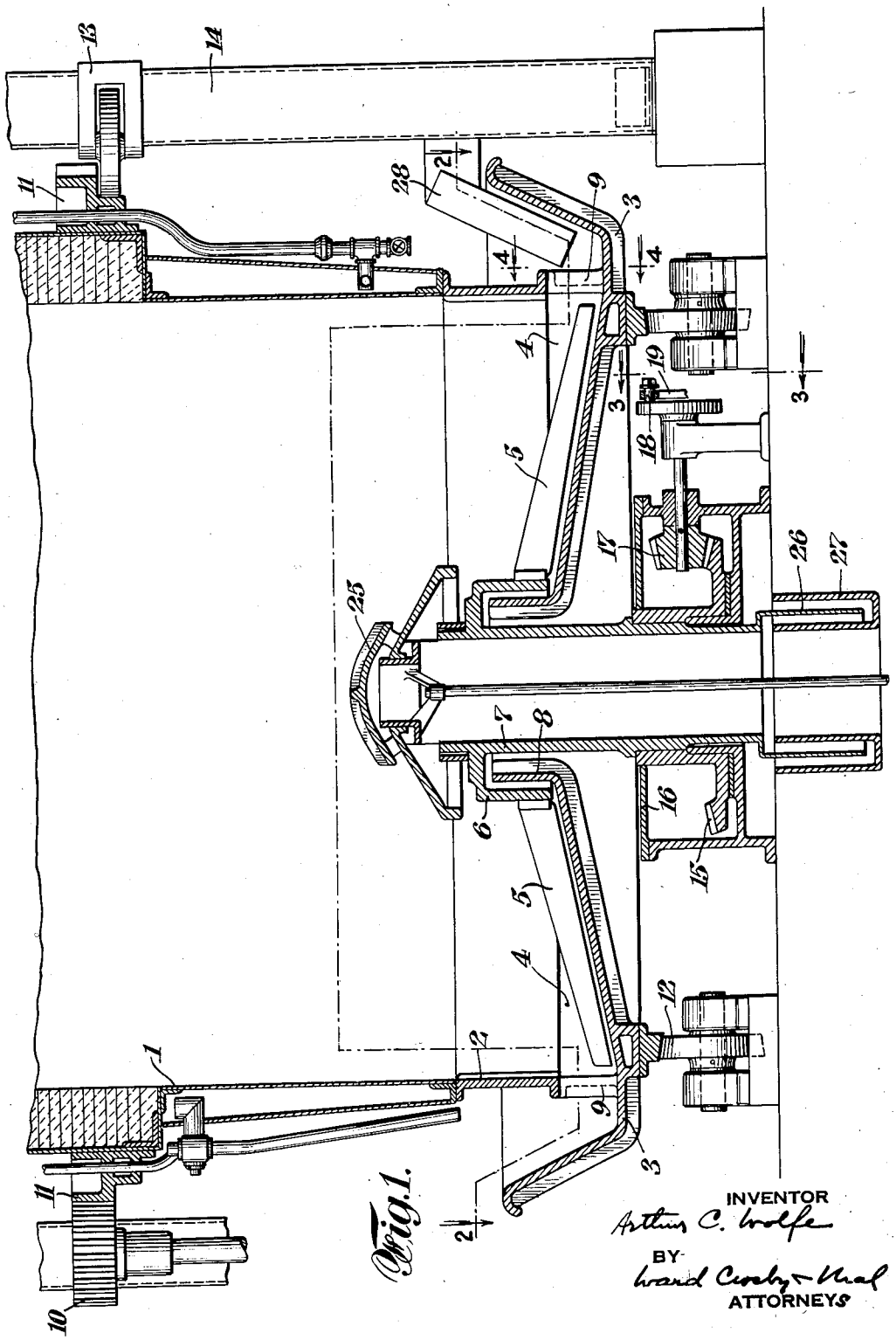


Fig. 1.

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Fig. 2.

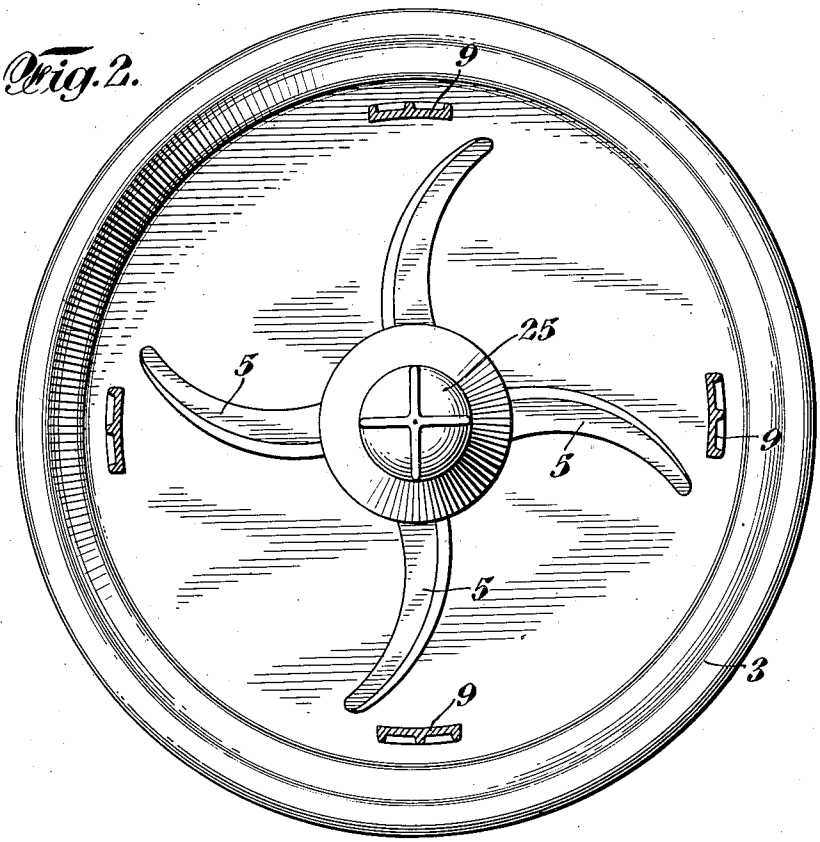


Fig. 3.

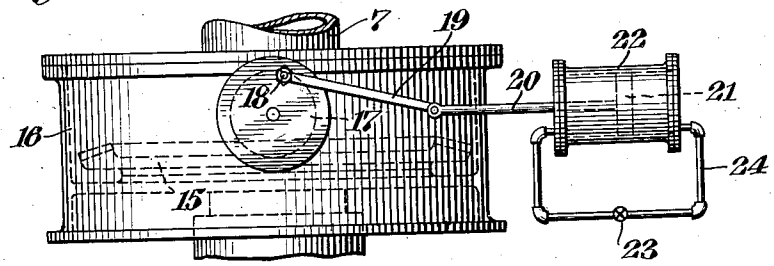
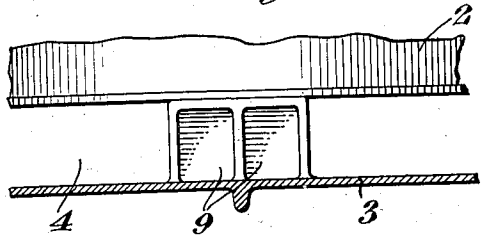


Fig. 4.



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UNITED STATES PATENT OFFICE

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GAS PRODUCER

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2 Claims. (Cl. 48—85.1)

The invention relates to gas producers, gas generators or like apparatus and has particular reference to the construction of the bottom portion of the apparatus involving a producer sidewall, firebed support and an ash-ejecting member cooperating therewith, with means for affording proper relative rotation between the parts to effect the discharge of the ash at the desired rate. Further objects and advantages of the invention will be in part obvious and in part specifically referred to in the description hereinafter contained which, taken in conjunction with the accompanying drawings, discloses a preferred embodiment thereof; such embodiment, however, is to be regarded merely as illustrative of the principles of the invention. In the drawings—

Fig. 1 is a central vertical section through the lower portion of a gas producer constructed in accordance with the invention.

Fig. 2 is a vertical section taken on the broken line 2—2 of Fig. 1 looking in the direction of the arrows.

Fig. 3 is a detail side view taken from the location of the line 3—3 of Fig. 1 looking in the direction of the arrows.

Fig. 4 is a fragmentary section taken on line 4—4 of Fig. 1.

The invention is illustrated as applied to a gas producer having a sidewall 1 adapted to enclose the firebed and which may be regarded as of any suitable construction, and provided at its bottom with an annular skirt 2 which projects down into a firebed supporting member 3, which in the illustrated embodiment of the invention is in the form of a shallow pan which encloses the bottom edge of the sidewall and is spaced beneath the latter to afford an ash-discharge passageway 4, the pan 3 also being adapted to provide a water-seal for the interior of the producer.

To force the ash through passageway 4 at the desired rate I employ an outstroking ash-ejecting member operating in the bottom portion of the firebed just above the bottom supporting pan 3. The illustrated form of agitating member is provided with four arms 5 radiating out from a central hub 6 connected to a hollow supporting post 7, the pan 3 being provided with an inner lip 8 which cooperates with hub 6 to form a water-seal.

The ash-ejecting member is thus supported and (as later described) controlled from the interior of the producer, in contrast to certain prior constructions wherein a bottom agitating member has been employed which projected through the ash-discharge passageway 4 and was supported and driven from the exterior of the producer.

In accordance with the present invention a suitable number of tie-pieces 9 are interposed between the sidewall 1 and pan 3 thus supporting the sidewall from the bottom pan and tying the two parts together, so to speak. Since the ash-ejecting member 5 is supported and driven from the interior of the producer the partial obstruction at certain points in the ash-discharge passageway 4 which is caused by the tie-pieces 9, is unobjectionable, the ash-ejector operating wholly in the space enclosed by such tie-pieces.

Thus by producing relative rotation between the ash-ejecting member 5 on the one hand, and the producer sidewall and bottom pan 3 on the other hand, and by adjusting the rate of such relative rotation, it is possible to eject ash from the producer at a rate conforming to operating conditions. In the illustrated embodiment of the invention, the sidewall 1 (and therefore the bottom pan 3) are rotated by a pinion 10 engaging a ring-gear 11 on the sidewall, the rotary motion being transmitted to pan 3 through the tie-pieces 9, and the pan (and therefore the sidewall), being supported on rollers 12 mounted underneath the producer. If desired a suitable number of rollers 13, carried by posts 14, may also be employed to absorb side-thrust on the above of the producer.

With the sidewall and pan 3 rotating together as above described, the firebed will rotate with them and carry the ash-ejecting member 5 around at the same rate of speed (thus producing no ash-ejecting effect) unless a speed differential be imposed on the ash-ejecting member so as to produce relative rotation between it and the other above described parts of the producer. In the illustrated embodiment of the invention, what may be termed a motion-retarding device is employed in connection with the ash ejector. As shown, the hollow post 7 has connected thereto a gear 15 enclosed by a housing 16 and meshing with a pinion 17 which is in turn connected to a crankpin 18. The latter as shown more in detail in Fig. 3, is connected by crank 19 to the rod 20 of a piston 21 operating in a cylinder 22 which contains suitable fluid under pressure, and has a regulating valve 23 controlling the flow of such fluid from one side of the piston 21 to the other through a line 24.

Thus the piston 21 and cylinder 22 will impose a resistance to the rotation of the ash-ejector 5 which depends upon the adjustment of valve 23.

When the invention is carried out by means of a rotating sidewall and bottom pan as above described, these parts will usually be rotated at constant speed, and the valve 23 may either be operated intermittently to cause ash to be ejected by slowing down the rate of rotation of the agitating member, or may be preferably set to maintain at all times a speed-differential between the ash-ejecting member and the other rotary parts of the producer.

In the illustrated form of the invention a tuyère hood 25 is carried by the hub 6 and therefore moves with the ash-ejecting member, the post 7 being provided at its bottom with a depending lip 26 adapted to form a water-seal in connection with the annular trough 27.

After the ash-ejecting member forces the ash through passageway 4 to the exterior part of pan 3, the ash may be removed from the pan in any suitable manner, a plow 28 being shown diagrammatically for this purpose, but not being shown or described in detail since suitable mechanism for this purpose is known in the art.

While a specific form of the invention has been described it should be understood that many changes may be made therein without departing from its main features, as set forth in the appended claims.

I claim:

1. A gas producer having a sidewall adapted to enclose a firebed, an ash-receiving pan located under said sidewall and surrounding the bottom thereof to afford a seal for the interior of the producer, said gas producer having an ash-ejecting passageway adjacent the bottom of the sidewall, tie-pieces connecting said sidewall and pan, a rotary ash-ejecting member operating within the sidewall adjacent said ash-ejecting passageway, means for rotating said sidewall and pan in unison, said agitating member being free of any positive driving connections whereby it tends to be rotated with the sidewall and pan through the medium of the ash, and a variable motion retarding device connected to said agitating member adapted to produce a speed differential between it and the sidewall and pan.

2. A gas producer having a sidewall adapted to enclose a firebed, a firebed supporting member disposed beneath and in spaced relation to said sidewall to afford an ash-ejecting passageway between the sidewall and said supporting member, supporting tie-pieces for the sidewall extending through said passageway to said supporting member, an ash-ejecting member rotatable relative to the sidewall and supporting member and overlying said supporting member within the space enclosed by said tie-pieces, means for rotating said sidewall and supporting member in unison, said agitating member being free of any positive driving connections whereby it tends to be rotated with said sidewall and supporting member through the medium of the ash, a rotary post connected to said agitating member which extends downwardly below said supporting member, and a variable motion-retarding device connected to the lower portion of said post, adapted to produce a speed differential between said agitating member and said supporting member.

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