No. 865,954.

PATENTED SEPT. 10, 1907.

M. VAN B. SMITH.

GAS PRODUCER.

APPLICATION FILED NOV. 2, 1906.

2 SHEETS—SHEET 1.

Fig. 1,

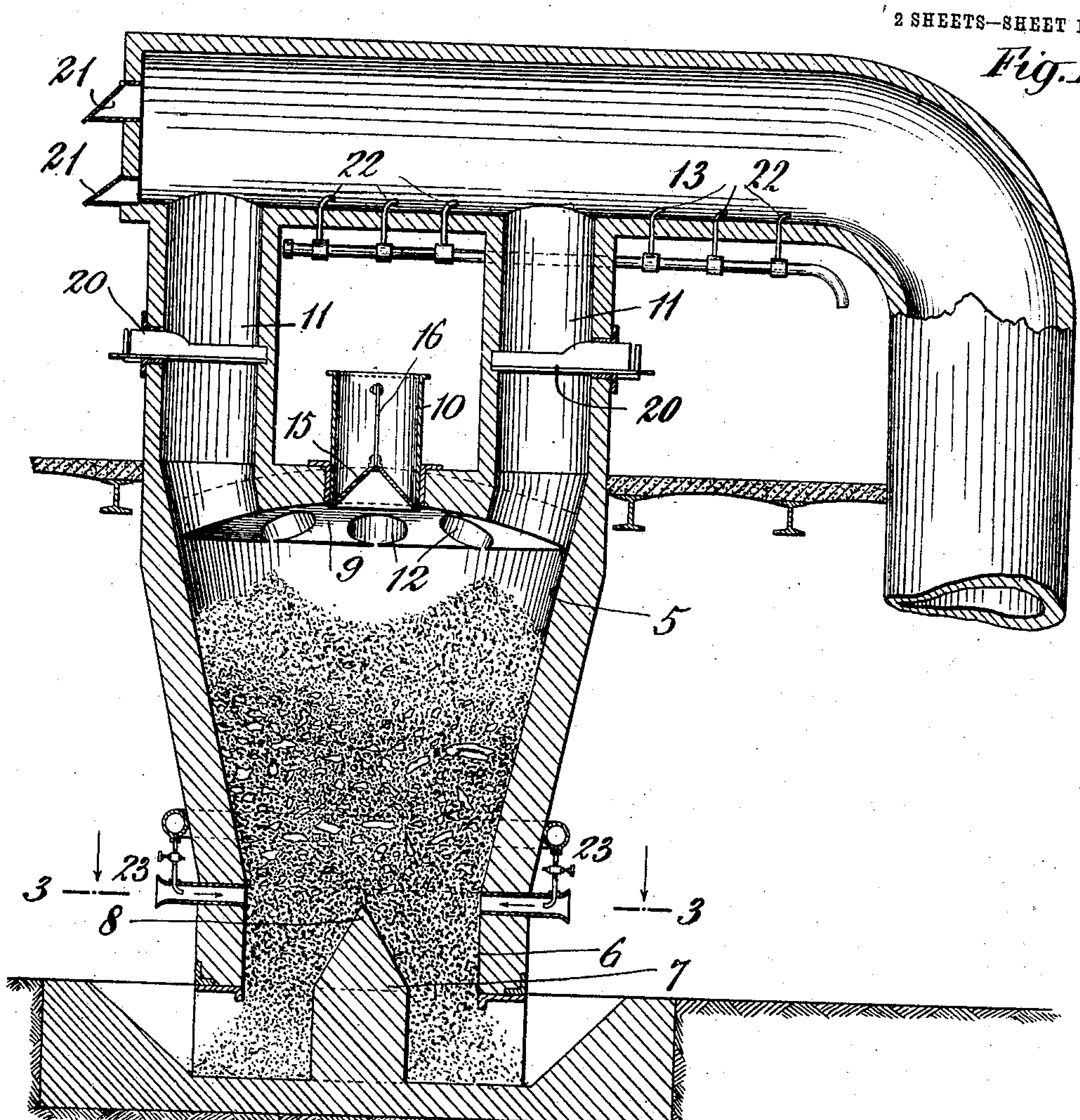
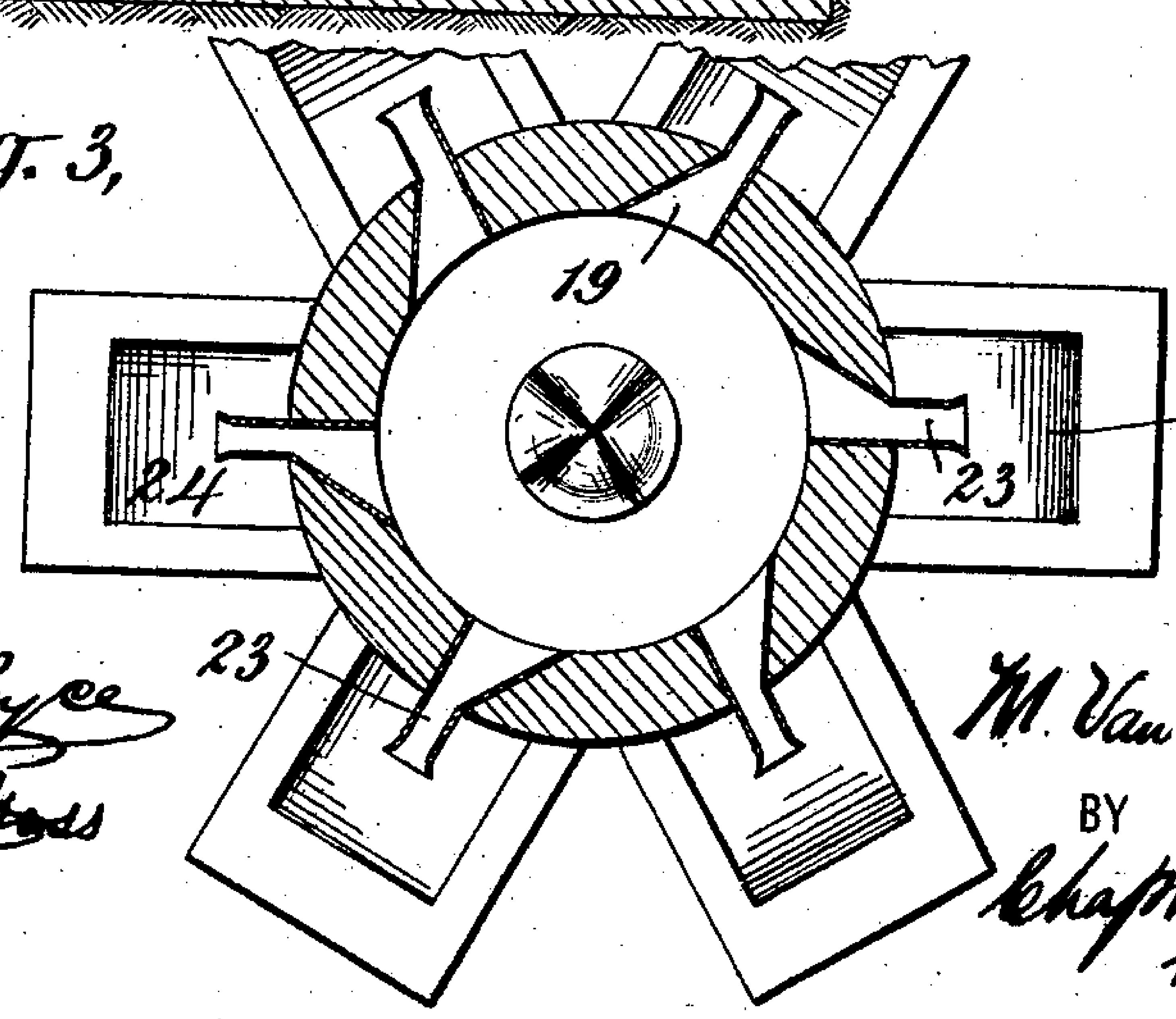


Fig. 3,



WITNESSES:

J. Waus Bryce

Harry F. Goss

INVENTOR

M. Van Buren Smith

BY

Chapin & Raymond

his ATTORNEYS

THE NORRIS PETERS CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

Fig. 2,

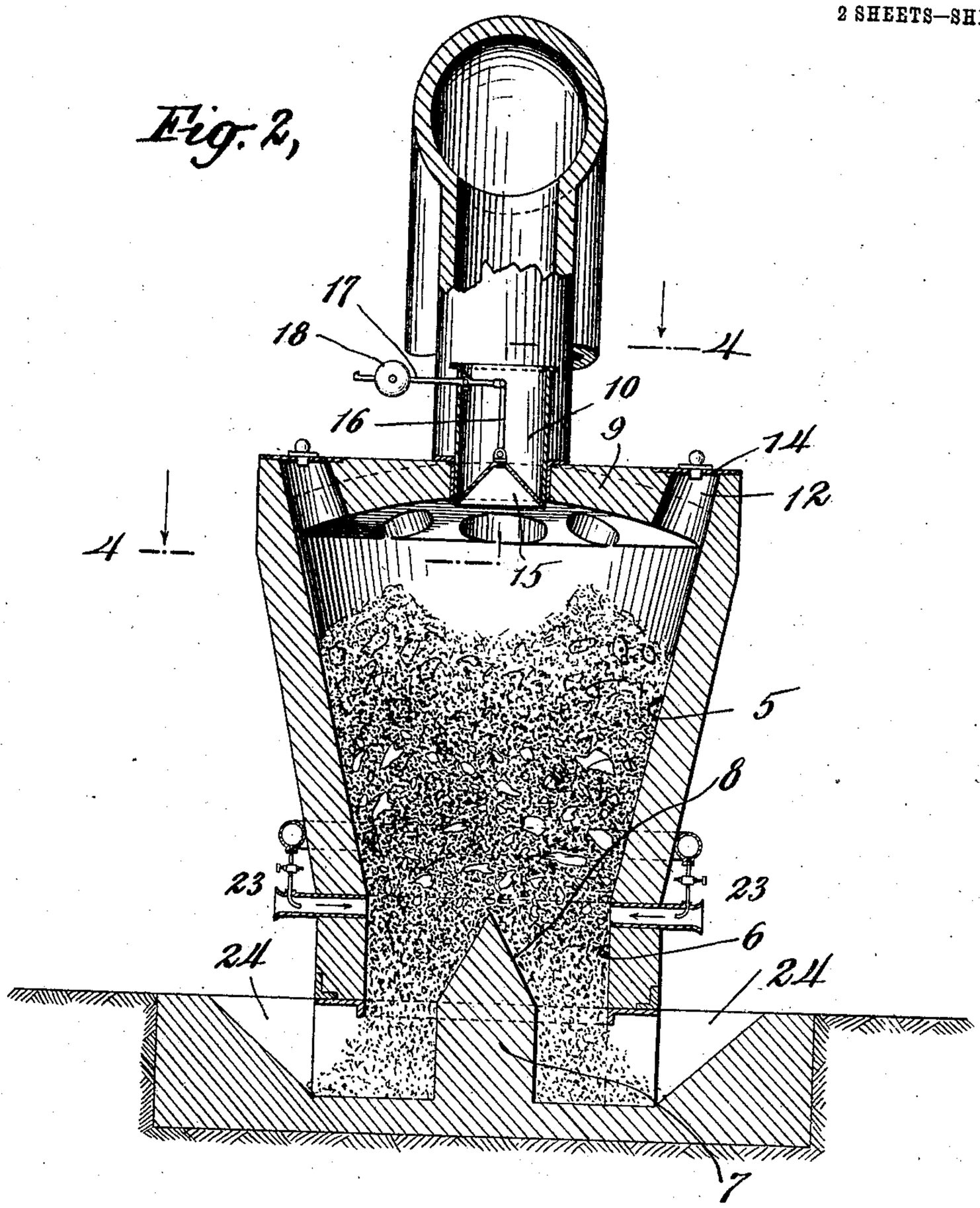
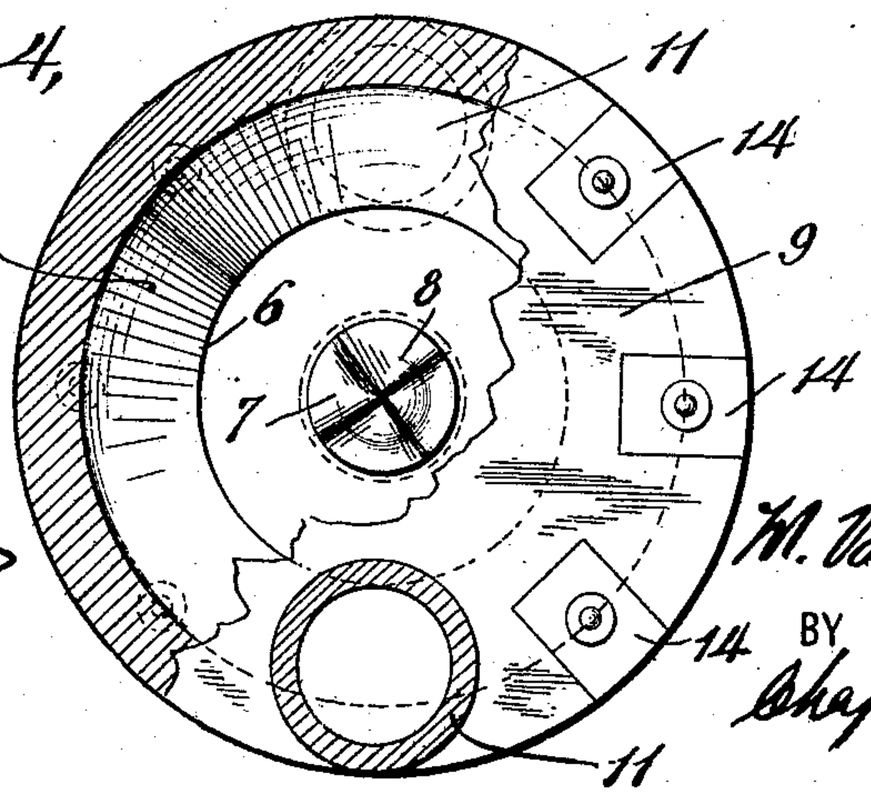


Fig. 4,



WITNESSES:

J. R. Van Buys

Harry L. Goss

INVENTOR

M. Van Buren Smith

BY

Chapin & Baynard

his ATTORNEYS

UNITED STATES PATENT OFFICE.

MARTIN VAN BUREN SMITH, OF NEW YORK, N. Y.

GAS-PRODUCER.

No. 865,954. Specification of Letters Patent. Patented Sept. 10, 1907.

Application filed November 2, 1906. Serial No. 341,681.

To all whom it may concern:

Be it known that I, MARTIN VAN BUREN SMITH, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Gas-Producers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in gas producers, and consists in certain novel details of construction and combination of parts as will hereinafter be fully set forth.

In order that my invention may be thoroughly understood, I will describe in detail an embodiment thereof, having reference to the accompanying drawings illustrating same, and will then point out the novel features in claims.

In the drawings: Figure 1 is a view in central vertical section through the gas producer. Fig. 2 is a central vertical section thereof at right angles to the plane of section of Fig. 1. Fig. 3 is a view in horizontal section through the producer, the plane of section being taken substantially upon the line 3—3 of Fig. 1. Fig. 4 is a horizontal section therethrough, the plane of section being substantially upon the line 4—4 of Fig. 2.

The furnace chamber 5 of my improved producer is circular in form in cross section, but has the form of a continuous taper from the top to about the point at which the twyers enter the same. From this point downward the chamber is cylindrical in form, as shown at 6 in the drawings, and within this cylindrical portion is a central abutment 7 terminating at its upper end in a cone 8. The apex of the cone is at about the level of the plane at which the twyers enter the chamber, said twyers being designated by the reference characters 23, 23. Ash pits 24 connect with the interior of the chamber at various points around same, provision being made for the closing of said ash pits by water seals in the usual manner. The upper end of the chamber 5 is closed by a dome 9, said dome being provided with a feed hopper 10 at the center thereof, with uptakes 11 arranged on each side of the central feed hopper, and with poke holes 12 at various points around same between the two said uptakes 11, 11. The uptakes 11 communicate with a flue 13, which leads to any desired point to which the gases are to be conveyed, and the poke holes 12 are provided with suitable caps or closures 14 which may be readily removed and replaced when desired.

The hopper 10 is provided with a distributing device in the form of a cone or bell as it is commonly called. This cone or bell 15 is suspended by means of a link 16 from a lever 17 pivoted to a wall of the hopper 10, the said lever provided with a counter-balancing weight 18 arranged to overbalance the weight of the cone or bell 15 so as to keep same normally in a closed position in contact with the lower edge of the hopper 10. Material is fed into the furnace chamber through the hopper 10, and is guided by the bell 15 toward the conical walls of the chamber 5. The combined action of the conical walls of the chamber and of the bell will be to force the material constantly toward the walls of the chamber, so as to avoid the formation of an open space immediately adjacent the said furnace chamber walls such as is common in the operation of other forms of producers. In operating the present form of producer, should such a space commence to form, it will be filled in as fresh material is fed to the device, because of the outward and downward pressure exerted by the material when being so fed in.

It will be noted that I not only continue the tapered form of the chamber 5 up as far as the crown of the dome, but the poke holes 12 are so formed that on one side thereof they form a continuation of this taper. Thus, a slice or poker inserted through the poke hole may be caused to hug closely to the walls of the chamber 5 all the way down.

The twyers employed may be of any suitable form, but preferably they are inserted tangentially through the walls of the furnace so as to direct their streams tangent to the geometric center of the furnace instead of radial or geometric with respect thereto. This will be clear from a perusal of Fig. 3, which is a horizontal section taken upon the plane of the twyers. The twyers are further shown in this figure with a flared mouth 19, such flare occurring in the direction upon the same side of the geometric center of the device as the twyers are set as a whole. The tendency of the incoming gases through the twyers will then be to swirl around the central cone 8, such central cone further acting to enhance or increase this swirling action, by which I obviate the tendency of the incoming gases from the twyers to form vertical lines of increased combustion opposite the incoming ends, as is often the case in the present form of furnace.

The uptakes 11 are provided with the usual or any suitable form of dampers 20, and the flue 13 is provided at one end with cleaning doors 21, and, at the bottom thereof, with nozzles 22 pointing in the direction of the flow of the gases, by which the soot which forms in the said flue may be blown toward the discharge end of the flue when required and then collected or otherwise disposed of as may be desired. The nozzles may of course be pointed in any direction desired so as to blow the soot toward any exit.

What I claim is:

1. A gas producer comprising a furnace chamber circular in cross section and outwardly flared in an upward

direction throughout its entire upper portion and a substantially cylindrical portion below this said flared portion, twyers entering the said chamber at substantially the plane dividing the two said portions, and a central abutment terminating in a central conical abutment, substantially as specified.

2. A gas producer comprising a furnace chamber cylindrical in cross section, a central abutment therein terminating in a cone, and twyers penetrating the outer walls of the said chamber, said twyers directed tangentially with respect to the said cone.

3. A gas producer comprising a furnace chamber circular in cross section and outwardly flaring in an upward direction, a dome thereover, a bell and hopper arranged centrally with respect to said dome, uptakes upon either side of said bell and hopper, and poke holes through the said dome between the uptakes, substantially as set forth.

4. A gas producer comprising a furnace chamber circular in cross section and outwardly flaring in an upward direction, a dome thereover, a bell and hopper arranged centrally with respect to said dome, uptakes upon either side of said bell and hopper, and poke holes through the said dome between the uptakes, said poke holes formed in part as a continuation of the tapered walls of said chamber, substantially as specified.

M. VAN BUREN SMITH.

Witnesses:
D. HOWARD HAYWOOD,
LYMAN S. ANDREWS, Jr.