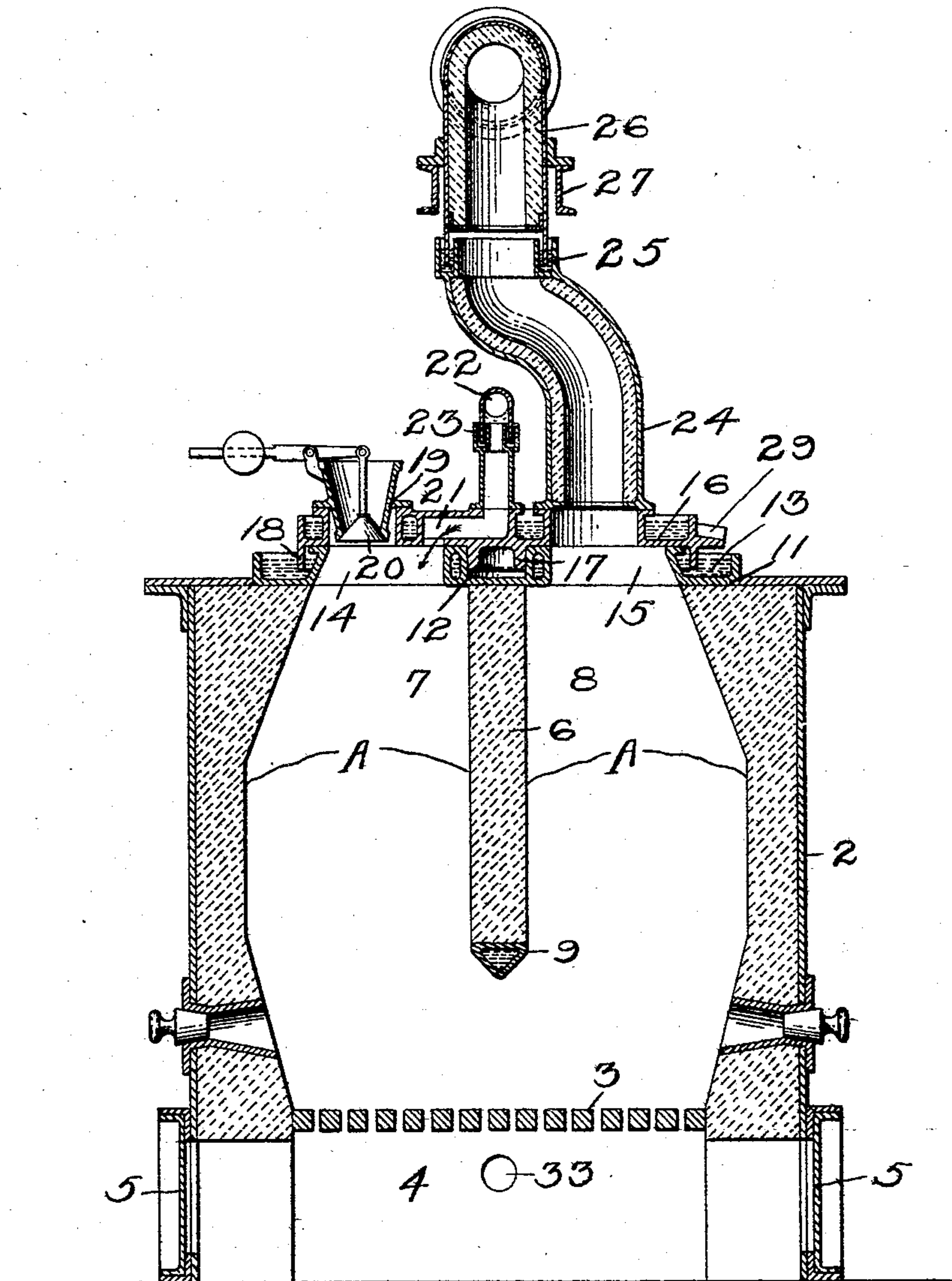


908,812.

Patented Jan. 5, 1909.

2 SHEETS—SHEET 1.

FIG. 1



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2 SHEETS—SHEET 2.

FIG. 2

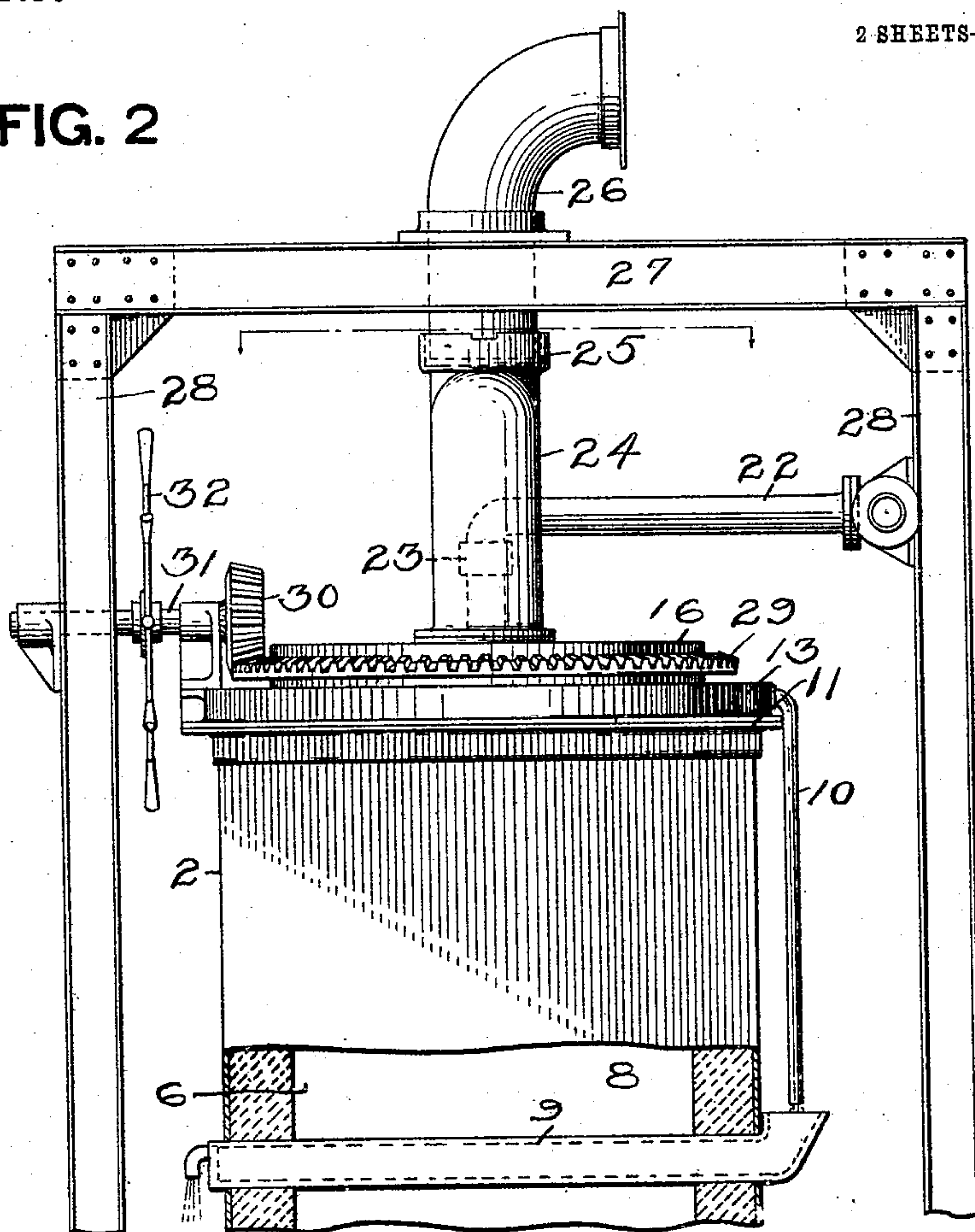
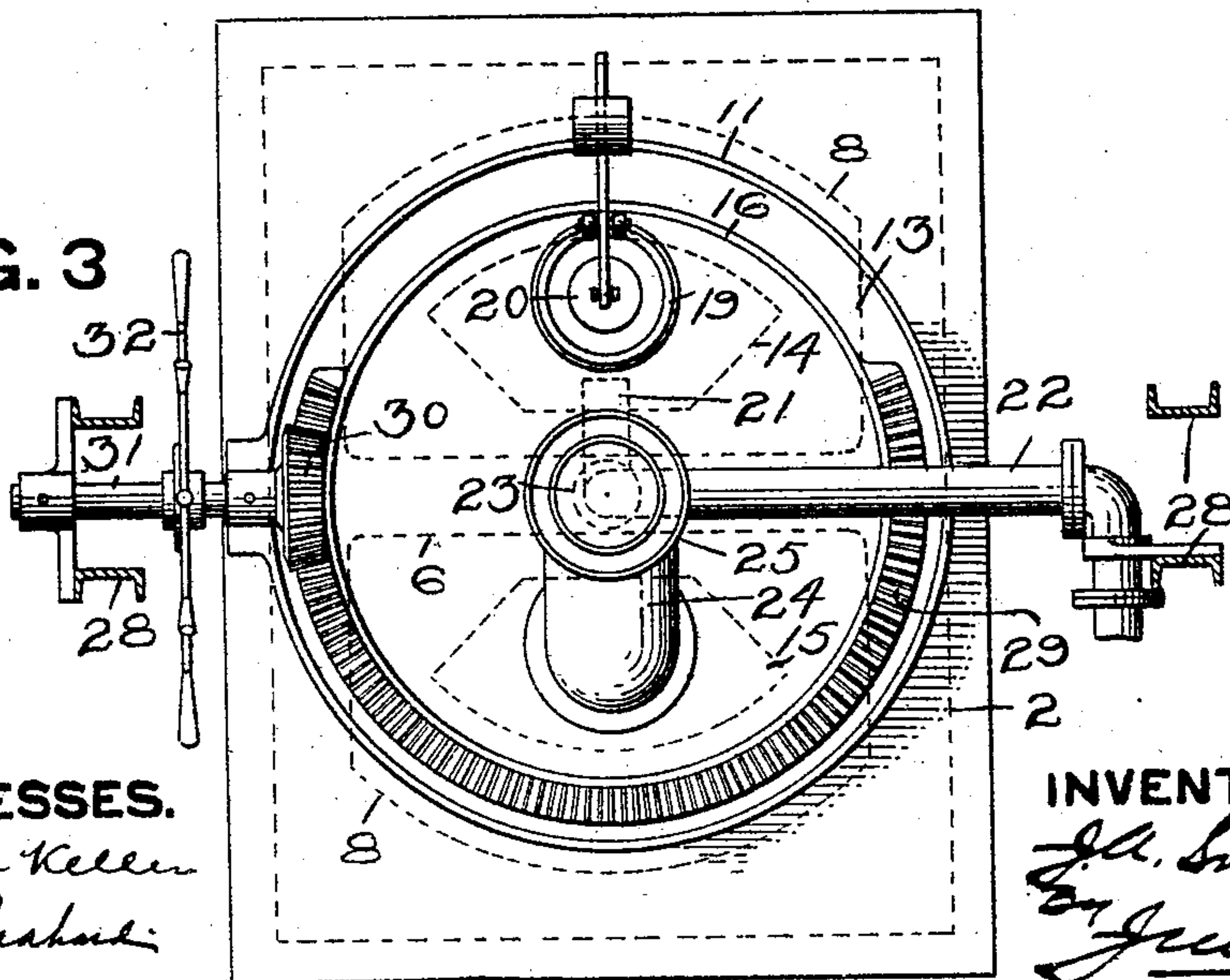


FIG. 3



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UNITED STATES PATENT OFFICE.

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GAS-PRODUCER.

No. 908,812.

Specification of Letters Patent.

Patented Jan. 5, 1909.

Application filed April 13, 1908. Serial No. 426,828.

To all whom it may concern:

Be it known that I, JOHN A. SMITMANS, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have
5 invented certain new and useful Improvements in Gas-Producers, of which the following is a specification.

This invention relates to a producer for generating combustible gas from coal or
10 other solid fuels, by burning the same into carbon monoxid and hydro-carbonaceous gases, and has particular reference to that class of producers wherein a plurality of generating chambers are employed, each
15 chamber adapted to receive fuel and discharge the gas generated and accumulated therein.

Producers of this general type have been constructed heretofore, each chamber being
20 equipped with its own fuel inlet and gas out-take. Such construction necessitates the manipulation of valves each time the operations are reversed, necessitating careful attention and the services of a skilled opera-
25 tor, and involving a somewhat costly construction owing to the double connections required for each chamber.

The primary object of the present invention is to greatly simplify the construction,
30 and to provide for such an operation as to practically eliminate the services of a skilled attendant.

To this end, the invention consists of a producer having a plurality of generating
35 chambers—two in the present adaptation with one fuel inlet and one gas out-take, and with means for establishing communication between any one of the chambers and the fuel inlet, and like communication be-
40 tween another of the chambers and the gas-out-take, the arrangement being such that no one chamber can be in communication with both the inlet and out-take at the same time. While these results may be accomplished by
45 various structural arrangements, the one preferred, and that here shown, consists of a head rotatable over the chambers and carrying the fuel inlet and gas out-take, each adapted by the movement of the head to
50 register with one or another of the chambers, or with the same wholly out of communication with the chambers, as operating conditions may require.

Figure 1 of the accompanying drawings
55 is a vertical section of apparatus constructed in accordance with the invention, and Fig.

2 is an elevation partly in section of the upper portion of the same, taken at right angles to Fig. 1. Fig. 3 is a top plan, partly in section.

Referring to the drawings, 2 designates the outer side walls of the stack-like producer body, provided with grate 3 of any desired construction, beneath which is the usual ash-pit 4 equipped with doors 5 for
60 removing the ashes and cinders.

A vertical partition 6 extending downwardly from the upper end of the body divides the upper portion thereof into two generating chambers 7 and 8, the partition
70 terminating a suitable distance above grate 3 but below the fuel line A, the partition being supported by the hollow water-cooled beam 9 seated in walls 2, and to which the water may be supplied from above by pipe
75 10. While the partition has the effect of dividing the upper portion of the body into transversely separated chambers, the lower portion of the combustion space, or that part
80 beneath the plane of the partition, is common to the chambers, with the one grate for both.

In the adaptation here shown for utilizing one inlet and one out-take for the chambers, said inlet and out-take are movable
85 for establishing the communications. To this end, the producer body is provided with a top 11 which closes the otherwise open upper ends of chambers 7 and 8, the top having the central bearing socket 12
90 and the annular water-seal channel 13. The upper surface of the top is flat and formed therethrough into chamber 7 is the segment shaped opening 14, with a similar opening 15 into chamber 8.
95

16 is a head which bears flatly on top 11, with a central bearing 17 entered in socket 12 and with the annular flange or apron 18 depending into channel 13.

Carried by and opening downwardly
100 through one side of the head is the coal or other solid fuel-charging hopper 19, closed by the usual bell 20. Opening downwardly through the head adjacent hopper 19 is the air port 21 which extends to the axially
105 arranged supply-pipe 22 with which it has the turning water or sand joint 23. Top openings 14 and 15 are of such size that both the hopper inlet and the air port communicate with the same opening.
110

Diametrically opposite the fuel inlet and opening downwardly through the head so

as to register with either of openings 14 and 15 is the gas out-take 24, which is raised above the air supply 22 and deflected into the axial line of the rotating head where it has the movable water or sand seal connection 25 with the fixed gas conduit 26. The latter may be supported by transverse beams 27 connecting side posts 28, and one of the latter may serve as a support for the fixed portion 22 of the air supply, as shown in Figs. 2 and 3.

For so turning the head as to reverse the inlet and out-take connections with the chambers, the head is provided with the segmental rack 29 with which meshes gear-wheel 30 on short shaft 31 which may be conveniently supported at one side of the producer body, and provided with hand wheel 32. In the two-chamber adaptation here shown, the segmental form of rack affords sufficient oscillation to establish either connection desired.

In operation, it is obvious that when chamber 7 and the fuel and air inlets are in communication, as in Fig. 1, chamber 8 is at the same time in communication with the gas out-take, thus rendering the operation continuous, the charging of fuel in one chamber in no way affecting or retarding the discharge of gas from the other. After a chamber has been fully charged the position of the parts may remain as shown in Fig. 1 as long as required for starting the production of gas of the desired quality, and further, until the other chamber has exhausted its gas producing quality. The positions are then reversed by manipulating wheel 32, thus placing the spent chamber 8 in communication with the inlet for a fresh charge, and establishing communication between the then producing chamber 7 and the out-take. The concentric arrangement of the air inlet and gas out-take permits of these movements without hindrance. At the same time, there is no danger of air flowing into the gas main during the reversing operation, as the coal and air inlets on the one side and the gas out-take on the other are completely closed or blanked when passing between top openings 14 and 15. Air alone, or air and steam, may be entered beneath the grate at 33 and forced upward therethrough into the body of fuel to facilitate the gas producing process, as may be required.

The invention, contemplated broadly, may be variously embodied as to the means for establishing communication between the generating chambers and the fuel inlet and gas out-take, nor is it restricted to the bottom or grate construction here shown.

I claim:—

1. In a gas producer, two elements—one movable with relation to the other for establishing communication between the two

and for reversing such communication, one element consisting of a producer body having a plurality of generating chambers, and the other element consisting of a fuel inlet and a gas outtake so spaced apart that both do not communicate at the same time with any one chamber.

2. In a gas producer, a producer body having a plurality of generating chambers, a fuel inlet, a gas outtake, and means for changing the relative positions of the chambers and said inlet and outtake for placing the inlet and outtake in register one at a time with the several chambers.

3. In a gas producer, a producer body and a head—one movable with relation to the other, the body having a plurality of generating chambers covered by the head, and a fuel inlet and gas outtake carried by the head and each common to all the chambers and so positioned on the head as not to communicate simultaneously with any one chamber.

4. In a gas producer, a producer body and a head—one revoluble with relation to the other, the body having a plurality of generating chambers covered by the head, and a fuel inlet and a gas outtake mounted on the head and each moved out of register with one chamber and into register with another by the movement of the revoluble part of the producer, the fuel inlet and gas outtake being so spaced apart that both are never in register simultaneously with the same chamber.

5. In a gas producer, a producer body having a plurality of generating chambers, a fuel inlet movable with relation to the chambers for communicating with any one of them, and a gas outlet also movable with relation to the chambers for communicating therewith one at a time.

6. In a gas producer, two generating chambers, a head movable over the chambers, and a fuel inlet and gas out-take moved by the head to establish communication between the fuel inlet and either chamber with the gas out-take communicating with the other chamber.

7. In a gas producer, two generating chambers, a head rotatable over the chambers, a fuel inlet at one side of the axial center of the head for communicating with either chamber and a gas out-take located on the head to communicate at the same time with the other chamber, and a turning joint for the out-take concentric with the head axis.

8. In a gas producer, two generating chambers, a head rotatable over the chambers, a hard fuel inlet and an air inlet on the head and both moved thereby into communication with either chamber, a gas out-take moved by the head into communication with the chamber out of register with said

inlets, and turning joints for the air inlet and gas out-take concentric with the head axis.

5 9. In a gas producer, a producer body partitioned to form generating chambers open at their upper ends, a top for the body having openings into the chambers and formed with a water-seal channel, a head 10 rotatable on the top and flanged complementary with the channel, a fuel inlet moved by the head to register with either generating chamber, and a gas out-take moved by the head to register with the chamber out of register with said inlet.

15 10. In a gas producer, a producer body partitioned to form generating chambers, a top for the body closing the upper ends of the chambers and having a flat upper surface with an opening therethrough into each

chamber, a head rotatable on the top and 20 having a flat under surface bearing on the flat surface of the top with a water seal between the head and top, and a fuel inlet and a gas out-take on the head and moved thereby with each in communication with either of 25 the chambers.

11. In a gas producer, generating chambers, a rotatable head, a fuel inlet and a gas out-take carried by the head and moved thereby respectively into register with either 30 chamber, a concentric rack on the head, and a head rotating gear meshing therewith.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. SMITMANS.

Witnesses:

GEORGE E. WINEMAN,
THOS. J. GUYTON.