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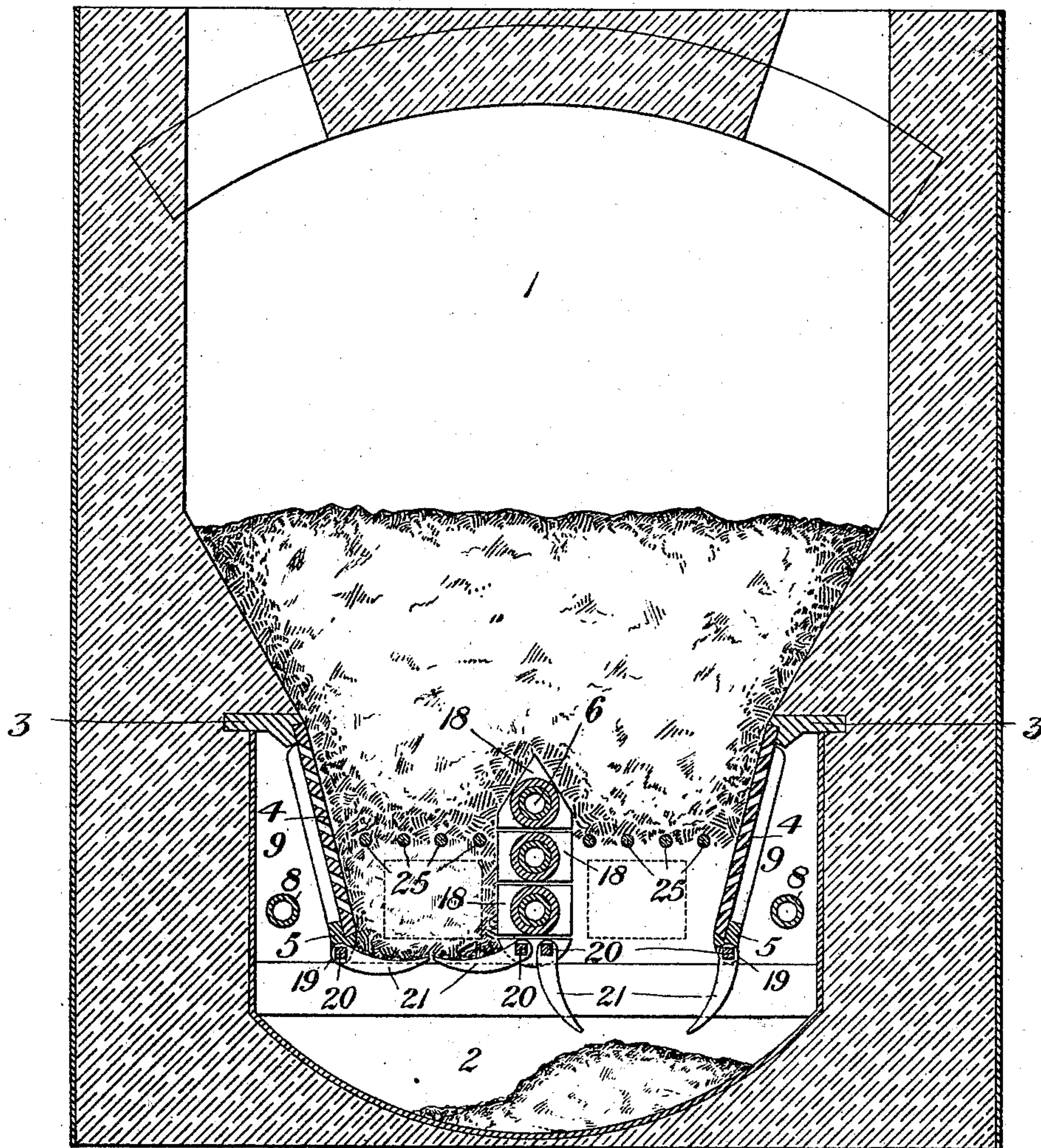
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W. SWINDELL.
GAS PRODUCER.

No. 544,800.

Patented Aug. 20, 1895.

Fig. 1.



WITNESSES

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(No Model.)

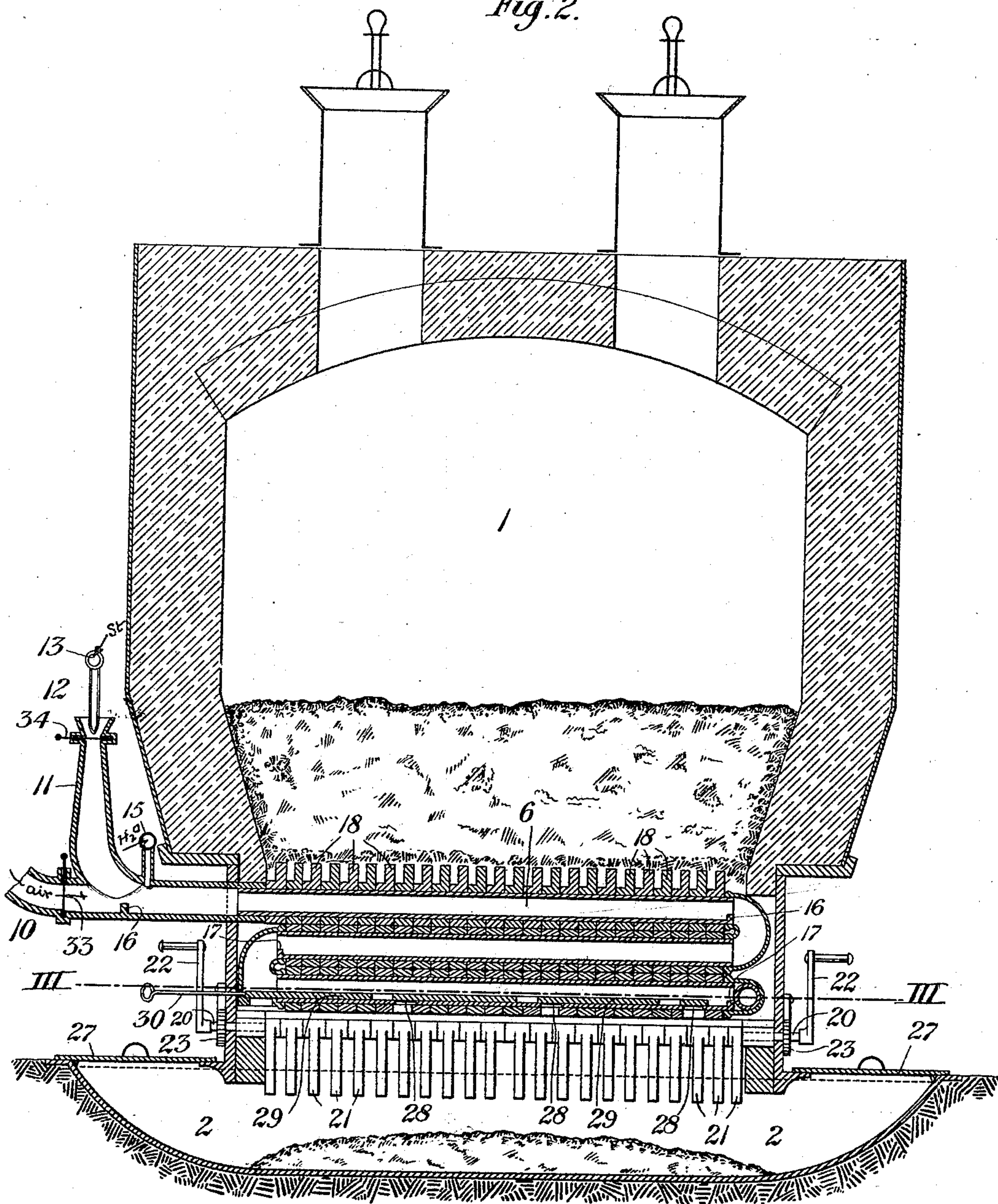
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Fig. 2.



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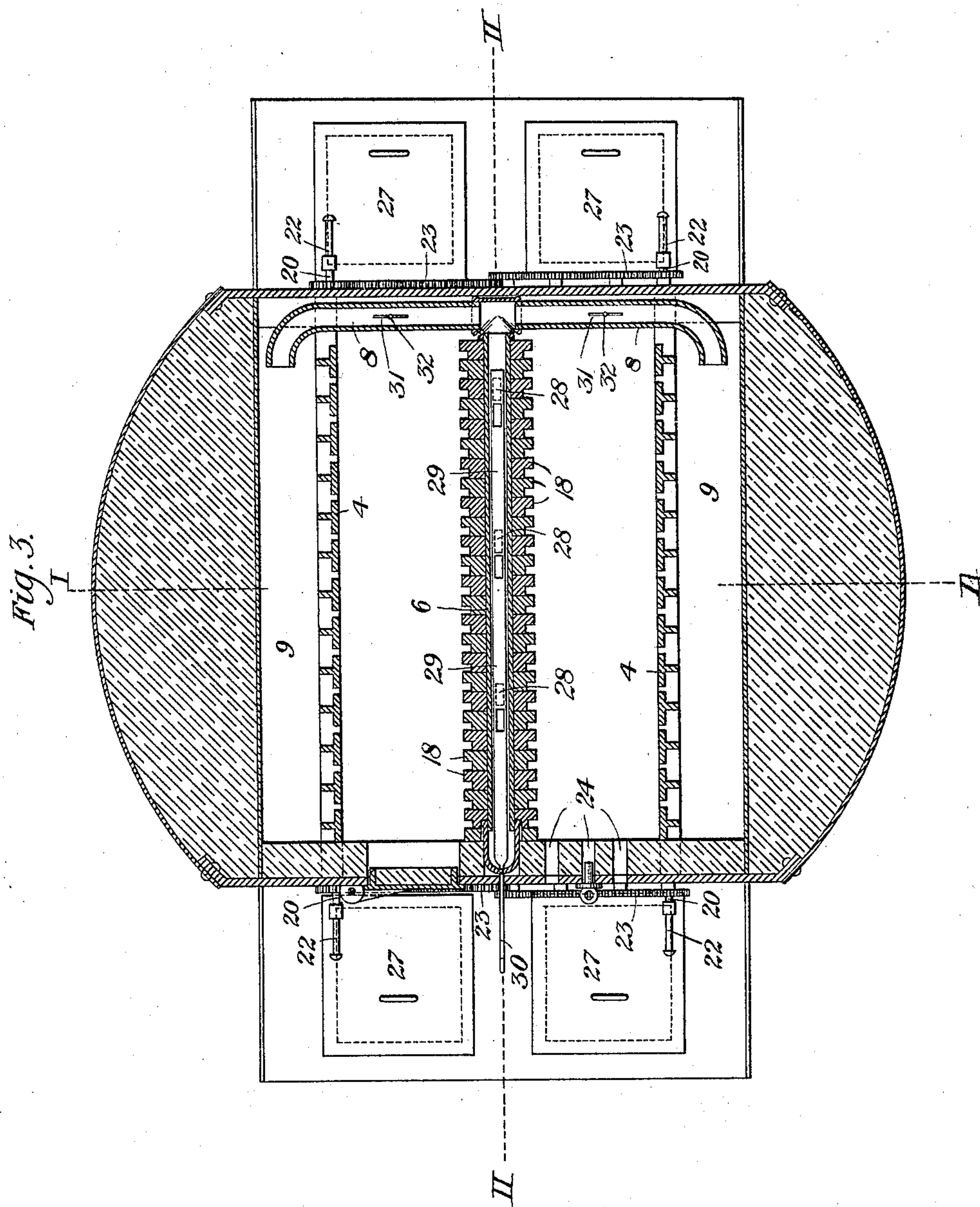
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UNITED STATES PATENT OFFICE.

WILLIAM SWINDELL, OF ALLEGHENY, PENNSYLVANIA.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 544,800, dated August 20, 1895.

Application filed April 29, 1895. Serial No. 547,537. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SWINDELL, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Gas-Producers, of which improvements the following is a specification.

The invention described herein relates to certain improvements in gas-producers, and has for its object a construction whereby the air and steam or air or steam may be directed to any part of the charge with any desired regulation of volume, thereby rendering it possible to work the producer evenly; and it is the further object of the invention to provide for operating the producer either with or without a water-seal.

In general terms the invention consists in the construction and combination substantially as hereinafter described and particularly claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional elevation of a producer embodying my improvements, the plane of section being indicated by the line I I, Fig. 3. Fig. 2 is a similar view, the plane of section being indicated by the line II II, Fig. 3; and Fig. 3 is a sectional plan view, the plane of section being indicated by the line III III, Fig. 2.

In the practice of my invention the upper portion or fuel-chamber 1 of the producer is of the usual or any suitable form or construction. The lower portions of the side walls of the fuel-chamber incline inwardly and downwardly, and at their lower ends overhang the ash-pit 2, being supported by sole-plates 3, as shown in Fig. 1. Perforated plates or grate-bars 4 are supported below the overhanging side walls by bearing-bars 5, which in turn are supported by the end walls of the ash-pit, and the upper edges of the grate plates or bars rest in notches in the sole-plates. About midway between the side plates or bars 4 a coil of pipe 6, having two or more connected members or sections, extends longitudinally through the producer. One end of the upper member or section projects beyond the wall of one end of the producer, and the opposite end of the lower member or section is provided with branches 8 for conducting the

fluids passing through the coil into the blast-chambers 9, which are interposed between the plates or bars 4 and the side walls of the producer, said branches being shown in Fig. 3. The end of the upper member or section projecting outside of the producer is connected by a pipe 10 to a fan or other air-compressor for forcing air alone into the producer, and is also provided with an extension 11, into the mouth of which projects a nozzle 12, connected by a pipe 13 to a source of steam-supply, whereby steam may be forced into the producer with the air delivered from the pipe 10. A pipe 15 is also connected to the upper member or section of the coil for the purpose of supplying water thereto. In order to retain a small quantity of water in the coil two abutments or dams 16 are placed in the upper member or section thereof, one outside of the junction of the water-supply pipe 15 and the other at the discharge end of said section, and similar abutments or dams 17 are placed at the discharge ends of the other sections or members of the coil. The water thus retained in the coil will be highly heated and supply steam when air alone is being forced into the producer.

In order to prevent ashes from compacting tightly on and around the coil, metal collars or sleeves provided with ribs or wings 18 are slipped one against the other on the members or sections of the coil, said ribs or wings projecting sufficiently far to afford passages for the upward flow of air into the center of the charge. As shown in Fig. 1, the ribs or wings of the sleeves on the upper member or section are V-shaped to prevent any lodgment of the ashes thereon.

In order to support the charge in the producer, shafts 19 are mounted in bearings below and in line with the side plates or bars 4, and two shafts 20 are similarly mounted below the central coil of pipe 6, and on these shafts are secured fingers 21, which, when turned to position as shown to the left in Fig. 1, will form a support for the charge. The ends of the shafts project beyond the walls of the producer, and to one shaft of each pair is applied a handle 22 for rotating the same, the other member of the pair being simultaneously operated through the medium of suitable gearing 23, as clearly shown in Fig. 3.

If desired, each shaft may be independently operated by a suitable handle. In order to support the charge when the fingers are turned down to remove the ashes, openings 24 are
 5 made in the end walls of the producer at a suitable distance above the fingers, and through these openings are inserted supporting-bars 25, which are withdrawn when the fingers are returned to normal position, there-
 10 by permitting the charge to drop down upon and be supported by the fingers.

The producer constructed as described is built over a pit 2, for the reception of ashes. This pit extends beyond the ends of the pro-
 15 ducer and such extended portions are normally closed by plates 27, as shown in Figs. 2 and 3. If desired, a water-seal may be formed by filling the pit to a level indicated by the dotted line in Fig. 2. When the water-
 20 seal is not used, the blast should be shut off when the plates 27 are shifted for removing ashes from the pit.

The lower section or member of the coil is provided with openings 28, permitting the es-
 25 cape of steam, air, or water into the ash-pit, and in this section or member are placed valves 29, which are preferably connected together, so as to be operated in unison to open or close said openings by the stem 30, pro-
 30 jecting outside of the producer-walls. These controlled escape ports or openings permit of the acceleration of combustion in the center of the charge when desired, as the escaping fluid will pass up through the passages formed
 35 by the ribs or wings 18 in the coil up into the middle of the charge.

It sometimes happens that combustion will be more rapid on one side of the producer than on the other, and in order to overcome
 40 this objectionable feature butterfly-valves 31 are placed in the branches 8 for the regulation of the flow of fluid to the blast-chambers 9 at the sides of the producer. These valves 31 are operated by stems 32, projecting
 45 through the wall of the producer, as shown in Fig. 3.

As shown in Fig. 2, valves 33 and 34 are fitted in the pipe 10 and extension 11, respect-
 50 ively, whereby the escape of fluid from the extension is prevented while air is being forced in through the pipe 10, and vice versa.

In lieu of forming the grating around the central coil by a series of winged collars, as

described, such grating may be made in two sections adapted to be bolted or otherwise 55 secured on opposite sides of the coil.

I claim herein as my invention—

1. The combination, in a gas producer, of a central coil of pipe having one end connected to a suitable fluid supply, and blast 60 chambers at the sides of the producer communicating with the opposite end of the coil, substantially as set forth.

2. The combination, in a gas producer, of a central coil of pipe having one end con- 65 nected to a suitable fluid supply, blast chambers at the sides of the producer communicating with the opposite end of the coil and valves controlling communication between the central coil and the blast chambers, sub- 70 stantially as set forth.

3. The combination, in a gas producer, of a central coil of pipe having one end connected to a suitable fluid supply, one section of the coil having valved openings into the 75 producer, and blast chambers at the sides of the producer communicating with the opposite end of the coil, substantially as set forth.

4. The combination of a producer having its lower end projecting down into a liquid 80 containing pit, a central coil of pipe having one end connected to a suitable fluid supply and blast chambers at the sides of the producer communicating with the opposite end of the coil, substantially as set forth. 85

5. The combination, in a producer, of a central coil of pipe having one end connected to a suitable water supply, detaining dams or abutments in the sections of the coil, and blast chambers at the sides of the producer 90 communicating with the opposite end of the coil, substantially as set forth.

6. The combination of a producer having an ash pit open at the ends of the producer, plates for closing the open ends of the pit, a 95 central coil having one end connected to a fluid supply, and blast chambers at the sides of the producer communicating with the opposite end of the coil, substantially as set forth. 100

In testimony whereof I have hereunto set my hand.

WILLIAM SWINDELL.

Witnesses:

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 F. E. GAITHER.