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PATENTED DEC. 4, 1906.

L. C. PARKER.
GAS PRODUCER.

APPLICATION FILED AUG. 7, 1905.

3 SHEETS—SHEET 1.

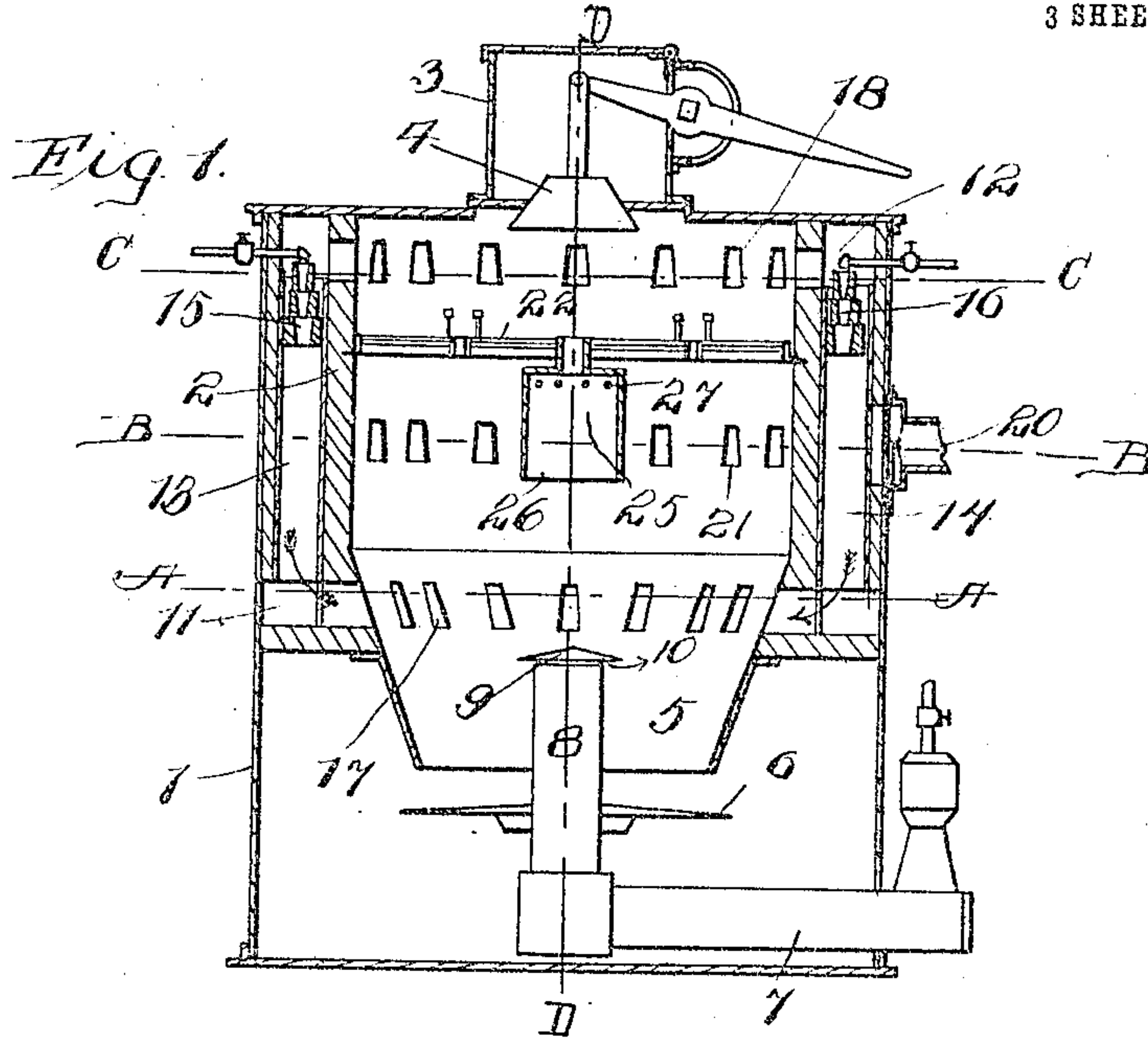


Fig. 2.

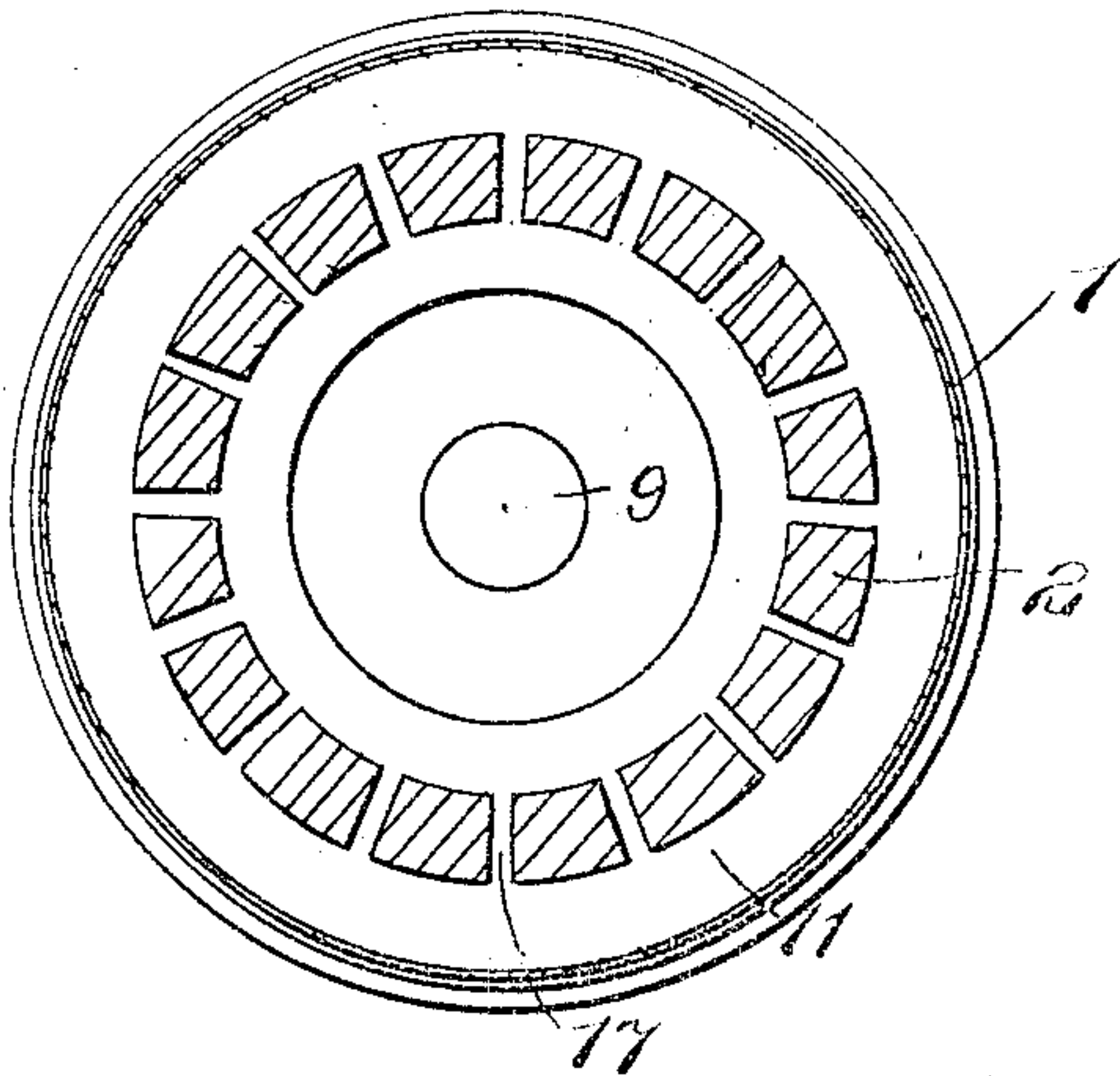
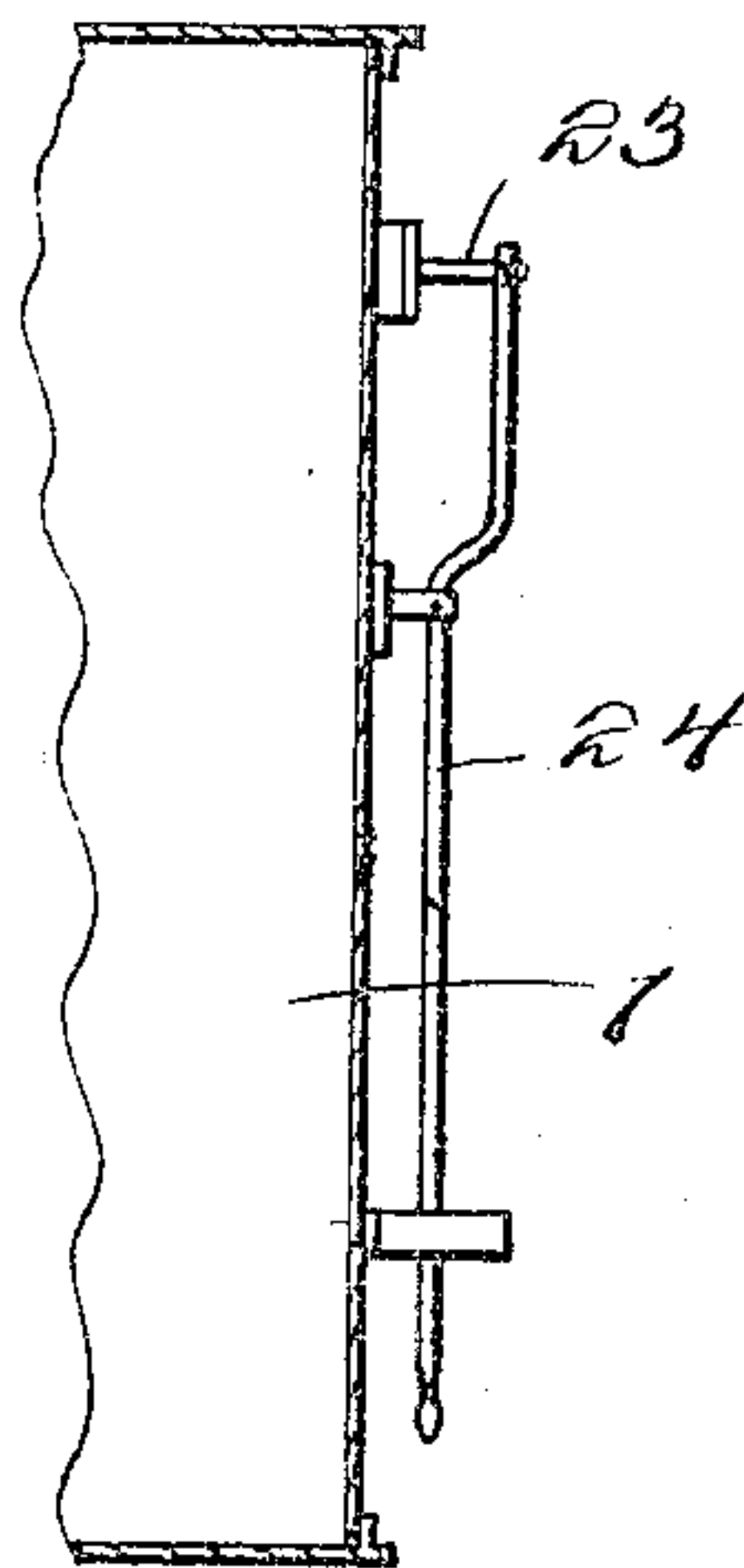


Fig. 6.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 3

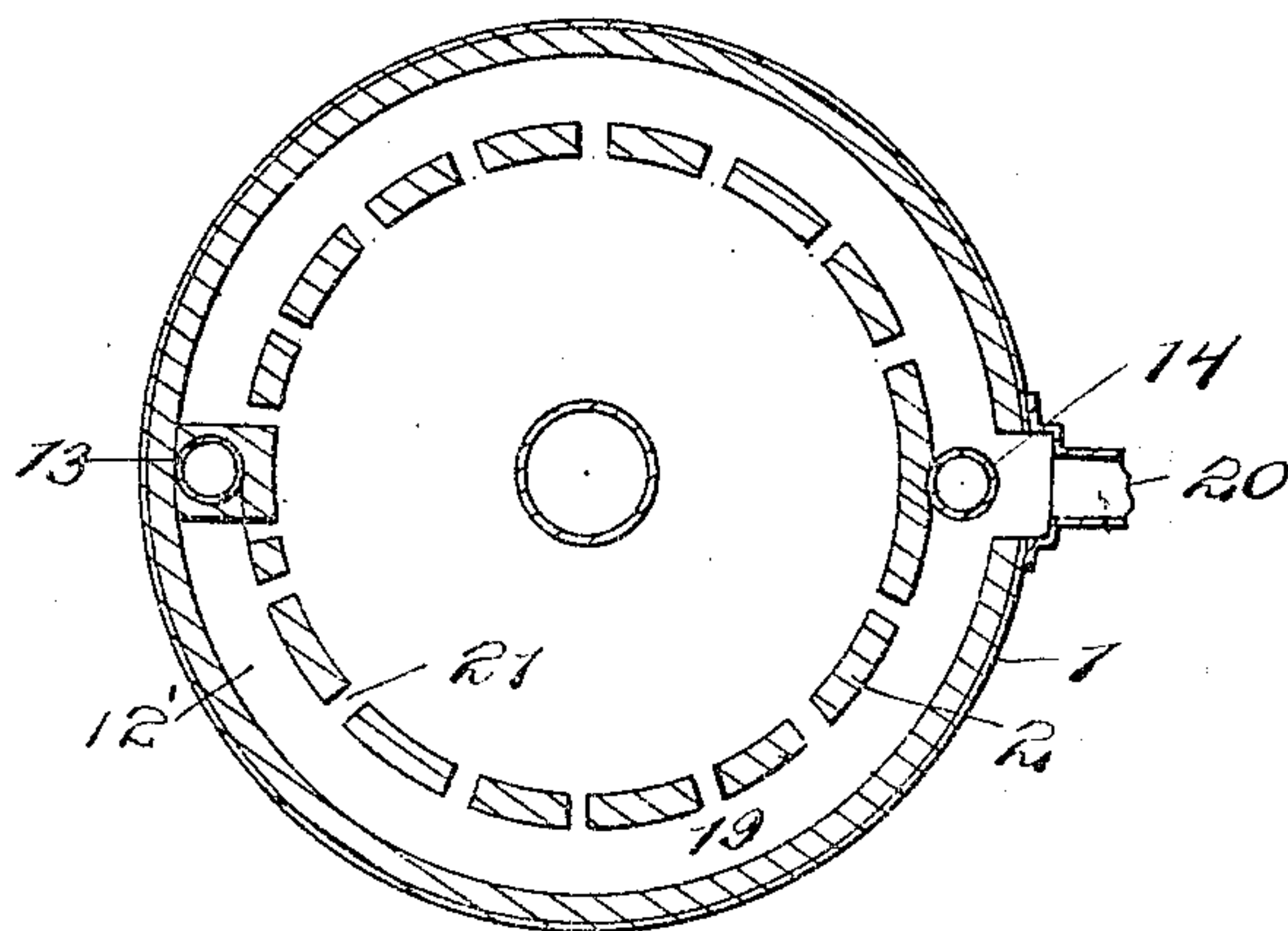


Fig. 4

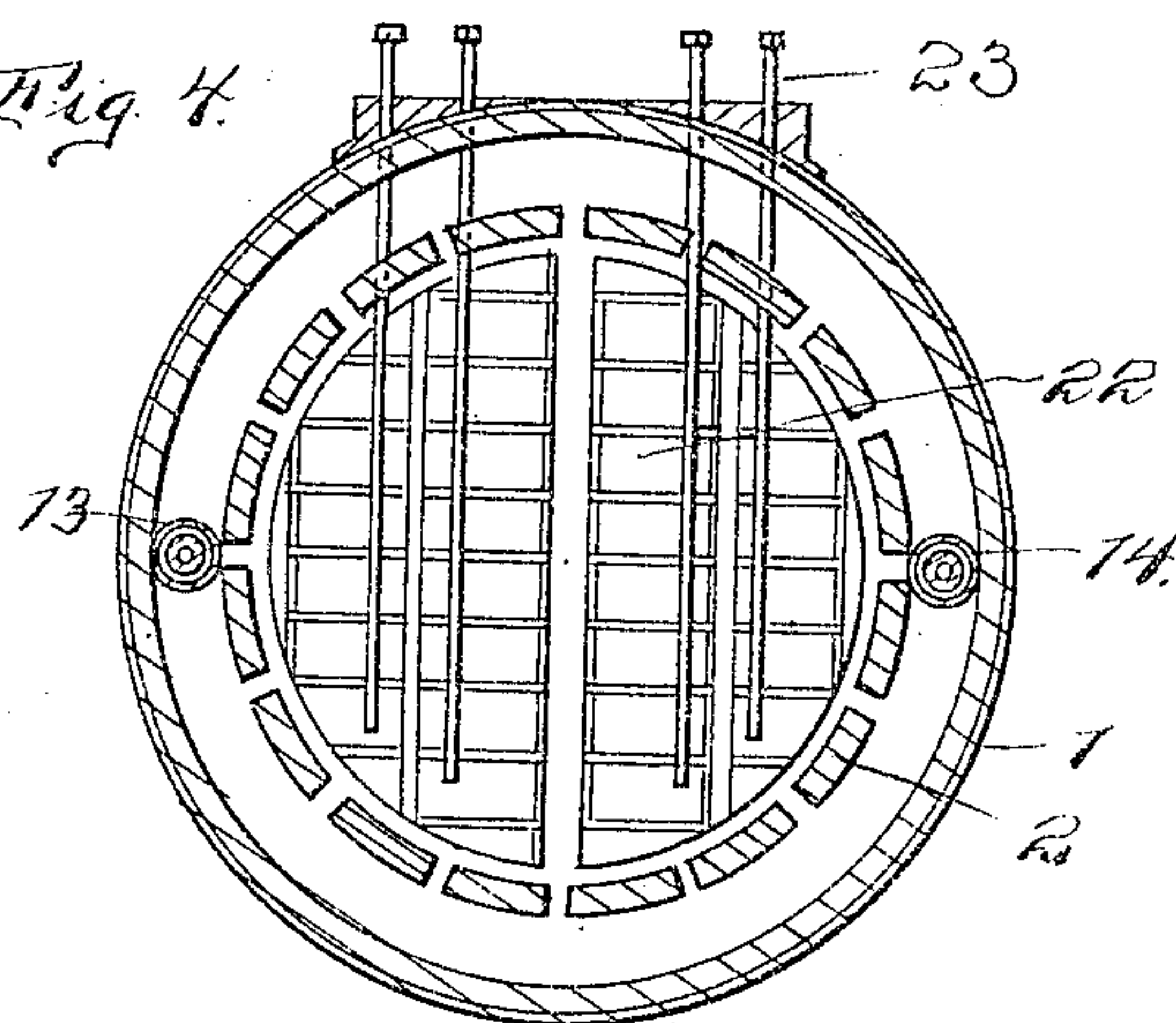
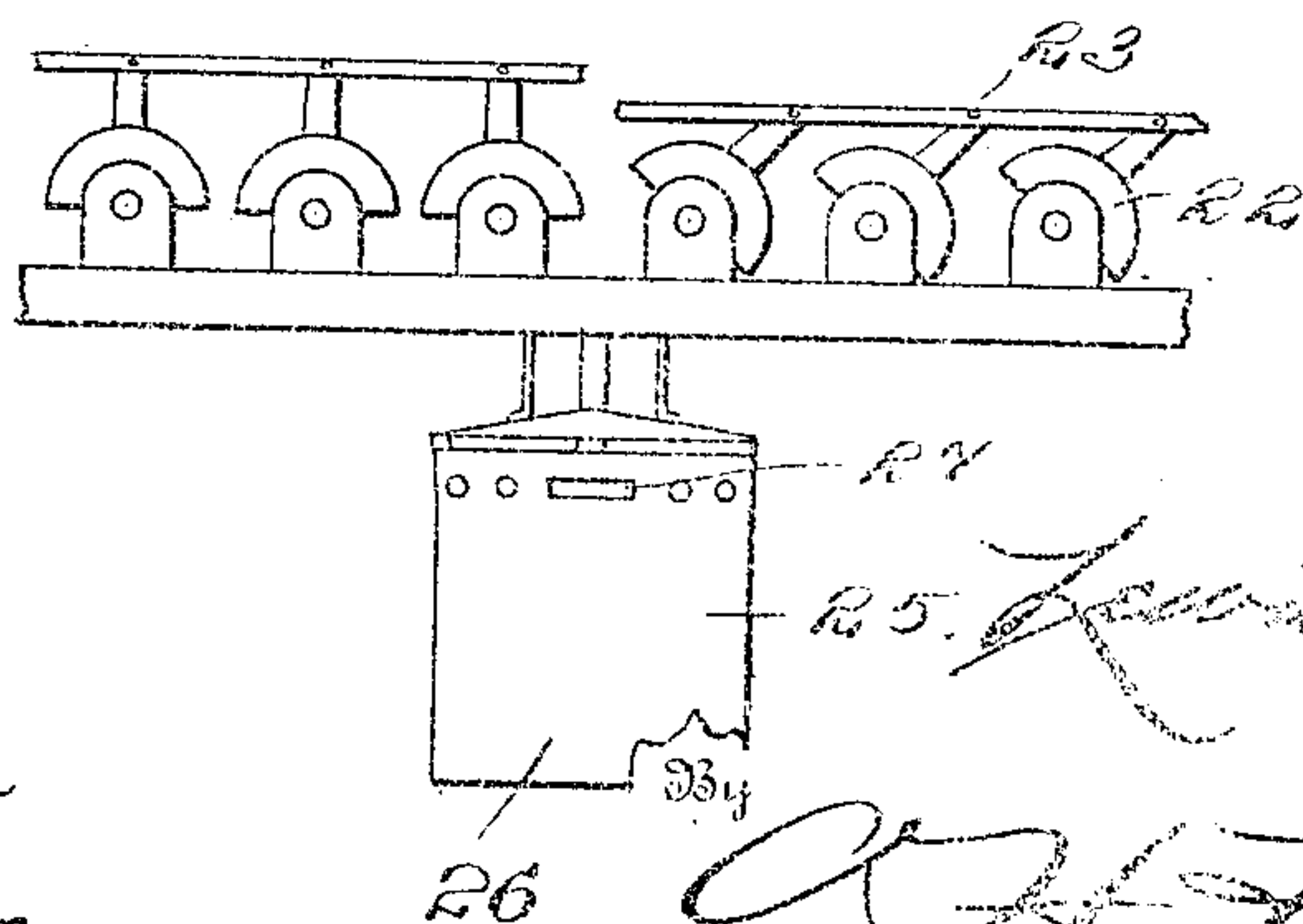


Fig. 5



Witnesses

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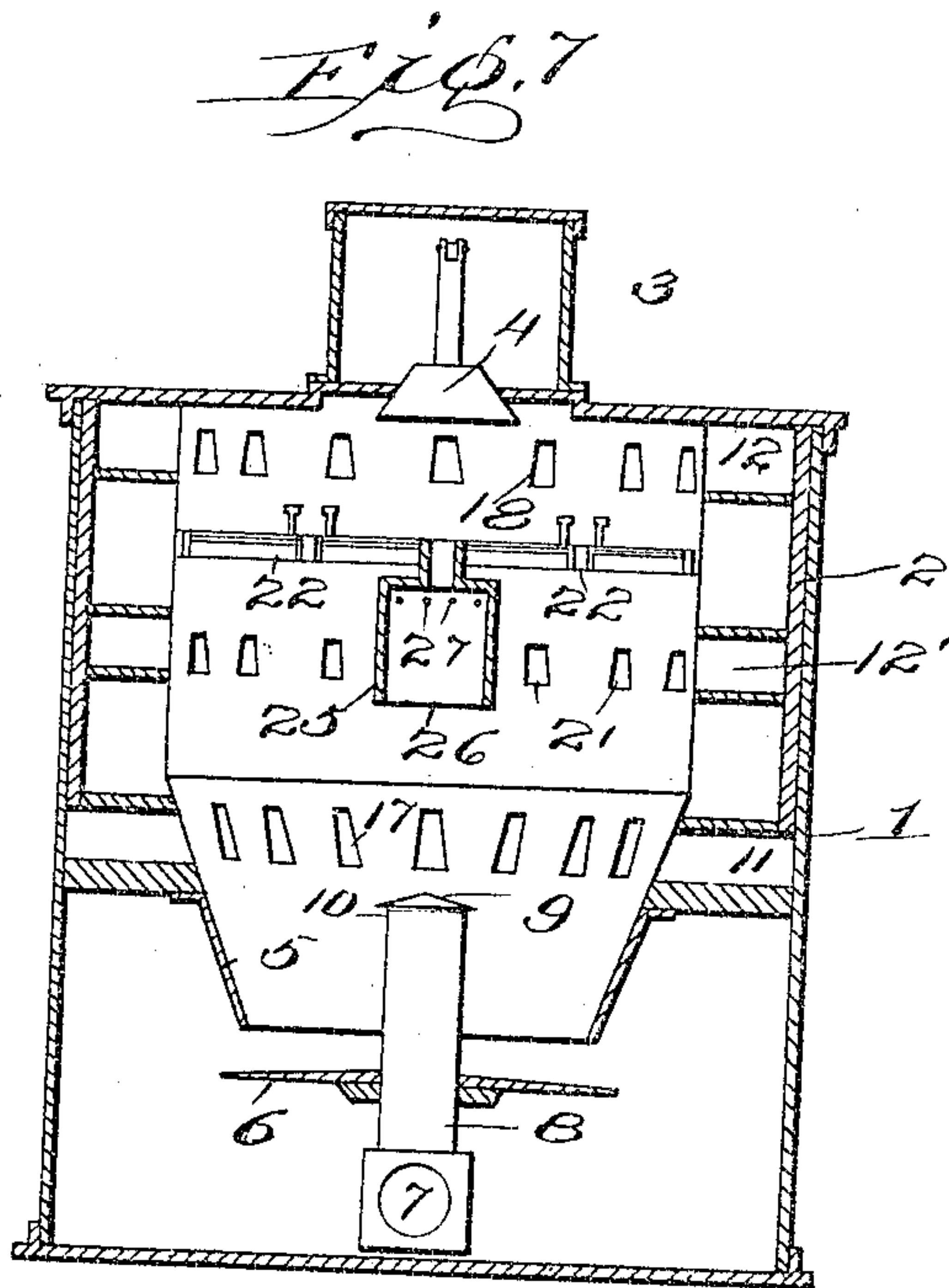
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

LEWIS C. PARKER, OF ROCHESTER, NEW YORK.

GAS-PRODUCER.

No. 837,584.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed August 7, 1905. Serial No. 273,069.

To all whom it may concern:

Be it known that I, LEWIS C. PARKER, a citizen of the United States, residing at Rochester, in the county of Wayne and State of New York, have invented new and useful Improvements in Gas-Producers, of which the following is a specification.

This invention has for its object the construction of an apparatus for the manufacture or production of gas from soft coal. To attain this end, I use an ordinary cylindrical steel shell of any desired dimensions having a hopper upon its top provided with a valve for admitting the coal and further provided with admissions for steam and air and with air-tight-fitting doors for the removal of ashes and taking care of the generation of gas.

The main difficulty heretofore in completely gasifying all the hydrocarbons from soft coal has been the forming of a large portion of rich vapors at a comparatively low temperature in the lower portions of the generator during gasification, and the same in passing out with the more perfect gas from the lower part of the fuel-column are condensed to a large extent into tarry deposits as well as liquid and oily compounds. Therefore to secure all the valuable constituents possible in the rich heavy vapors which condense readily it is necessary to commingle them with highly-heated vapors and subject them to a high temperature while passing through the high-temperature zone of the generator, where perfect and full decomposition takes place by uniting with additional portions of air and steam.

In the drawings forming a part of this specification, Figure 1 is a vertical sectional view. Fig. 2 is a cross-section on line A A, Fig. 1. Fig. 3 is a cross-section on line B B, Fig. 1. Fig. 4 is a cross-section on line C C, Fig. 1. Fig. 5 is an enlarged detail view of the rocking grates and the heating-pipe. Fig. 6 is a detail view showing the levers and their attachment for operating the rocking grates. Fig. 7 is a sectional view taken on line D D, Fig. 1.

Referring to the drawings, 1 represents the shell of the generator, having a fire-brick lining 2 and a hopper 3, provided with a valve 4 for introducing the coal. Mounted in the shell is a bosh 5 for holding the ashes in position while resting on the sloping disk 6, from which they are caused to pass by gently agitating said disk by any convenient means, (not shown,) causing the ashes to fall in the

space below. The steam and air blast pipe 7 connects with a vertical pipe 8, having a deflecting cap 9, the upper end of the vertical pipe terminating a few inches below the top of the bed of ashes, as shown at 10. Within the generator-wall 2 are formed three annular passages 11, 12, and 12', which pass entirely around within the walls, the passage 11 being near the bottom of the generator, the passage 12 near the top, and the passage 12' about midway.

Direct connection is formed between the passages 11 and 12 by vertical pipes 13 and 14. Within each of the pipes 13 and 14 is located a steam-jet or blower 15 and 16. From the annular passage 11 are tapering openings 17, wider at the bottom than at the top, which prevent clogging and form a passage for gaseous vapors from the passage 11 into the lower part of the generator 1, and from the passage 12 are openings 18, wider at the bottom than at the top, so as to prevent clogging, and which admit of gaseous vapors passing from the upper part of the generator into the passage 12 and thence down the pipes 13 and 14 into the passage 11. Within the lining-walls is located a passage 12', extending from the exit-port 20 of the generator around to the vertical pipe 13, the said passage 12' also having communication with the interior of the generator through the vertical tapering openings or slots 21, which are wider at the bottom than at the top, so as to prevent clogging and which admit of gas passing from the interior of the generator into the passage 12' and on through the exit-port 20.

Within the generator between the openings 18 and 21 are located the dumping-grates 22, supported by the fire-brick lining 2, the object of the same being to support a quantity of coal which may be subjected to a temperature which will readily admit of its rich tarry vapors being driven out and of the partial coking of the coal and dumping down on the fuel-column, also to act as a means for distributing the coal, as desired, over the top of the fuel-column by means of the bars 23 and lever 24. The said dumping-grate secures a twofold result in this position. Directly beneath the central part of the grate and secured thereto is located a gas collector or pipe 25, its lower end being open, as shown at 26, and its upper end provided with slots or openings 27 around its periphery or cap for the free passage of gas from the top as it rises from the bottom.

It will be noticed that the lower end of the pipe 25 reaches just below the bottom of the openings 21, leading into the annular passage 12'. Therefore it will be observed that the pipe 25 may be of any convenient size or shape for the purpose of allowing a volume of gas to pass from the central part of the generator to the space above the fuel-column or under the grate 22.

To illustrate the operation of my soft-coal producer, I will assume the generator to be filled with coal from the ash-line to the top of the fuel-column to be in a state of perfect combustion, as in this condition with a slight vacuum within the passage 12' exerted from an exhaustor (not shown) beyond the outlet-pipe 20. Therefore the gas from all sides uniformly will be drawn into the passage 12' and on out through the exit 20, while the heat by combustion of the coal and coke will rise to the top of the fuel-column and largely gasify, and thus coke the upper layers of coal, while the highly-heated volume of gas rising and passing directly upward in the central portion of the generator will pass up through the pipe 25 and commingle with the rich vapors at the top of the fuel-column, causing a large part of the most easily vaporized constituents in the coal on the grate to distil and to be sucked into the openings 18 and down the pipes 13 and 14 by the steam jets or blowers 15 and 16 to pass into the annular chamber 11, thence through the ports 17 into the highly-heated zone of the fire, there to become mingled with additional portions of air and steam and ascending disassociated and forming into a monoxid or producer gas.

What I claim as new, and desire to secure by Letters Patent, is—

1. An apparatus for the generation of gas, consisting of a generator having two annular passages within the lining-wall, one passage located near the bottom of the fuel-column and the other near the top of the generator, tapering openings forming communications between the annular passages and the interior of the generator, vertical pipes leading from the lower to the upper passage, a steam-jet in each pipe for creating a downcurrent of gas, a dumping-grate in the generator, an inlet-port and an exhaust-port, substantially as specified.

2. An apparatus for generating gas, consisting of a generator having two annular passages within the lining-wall, one located near the bottom of the fuel-column and the other near the top of the generator, tapering openings in the wall of the generator which form communications between the passages and the interior of the generator, two vertical pipes connecting the annular passages, an exhaust-blower or steam-jet in each for withdrawing the gases and vapors, an inlet-port and an exhaust-port, substantially as specified.

3. An apparatus for generating gas, consisting of a generator, an annular passage within the lining-wall of the generator near the lower part, a similar annular passage within the said wall near the top, tapering openings in the wall of the generator forming communications between the said passages and the interior of the generator, said passages being connected by two vertical pipes, each pipe being provided with a steam-jet near its top, a dumping-grate arranged within the interior of the generator, a gas-collector centrally attached to said grate, an inlet-port and an exhaust-port, substantially as specified.

4. An apparatus for the generation of gas, consisting of a generator, a fuel-column, a dumping-grate located above the fuel-column, adapted to hold a quantity of coal, three annular passages formed within the lining-wall, tapering openings in the wall of the generator for the passage of gas between said annular passages and the interior of the generator, vertical pipes connecting the upper and lower annular passages, a central pipe with full open bottom extended down into the top of the fuel-column with its upper end arranged for the free passage of gas into the spaces above the fuel-column, an inlet-port and an exhaust-port, substantially as specified.

5. An apparatus for generating gas, consisting of a generator, a hopper arranged upon the top of the generator, a dumping-grate beneath the hopper, a fuel-column, three annular passages formed within the lining-wall, tapering openings forming communications between the passages and the interior of the generator, a central pipe with full-open bottom and perforated top suspended centrally from the grate, pipes connecting the upper and lower passages, jets located in said pipes, an inlet-port and an exhaust-port, substantially as specified.

6. In an apparatus for the generation of gas, a generator having a hopper arranged upon the top thereof, a dumping-grate within the generator beneath the hopper, a fuel-column, three annular passages within the lining-wall, tapering openings forming communications between the said annular passages and the interior of the generator, pipes connecting the upper and lower annular passages, jets located in said pipes, a centrally-disposed pipe suspended from the grate having a full-open bottom and perforated top, an inlet-port and an exhaust-port, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LEWIS C. PARKER.

Witnesses:

EDWARD SIMPSON
CHARLES WHITE.