

(No Model.)

J. G. SANDERSON.
GAS PRODUCER.

No. 600,954.

Patented Mar. 22, 1898.

Fig. 1.

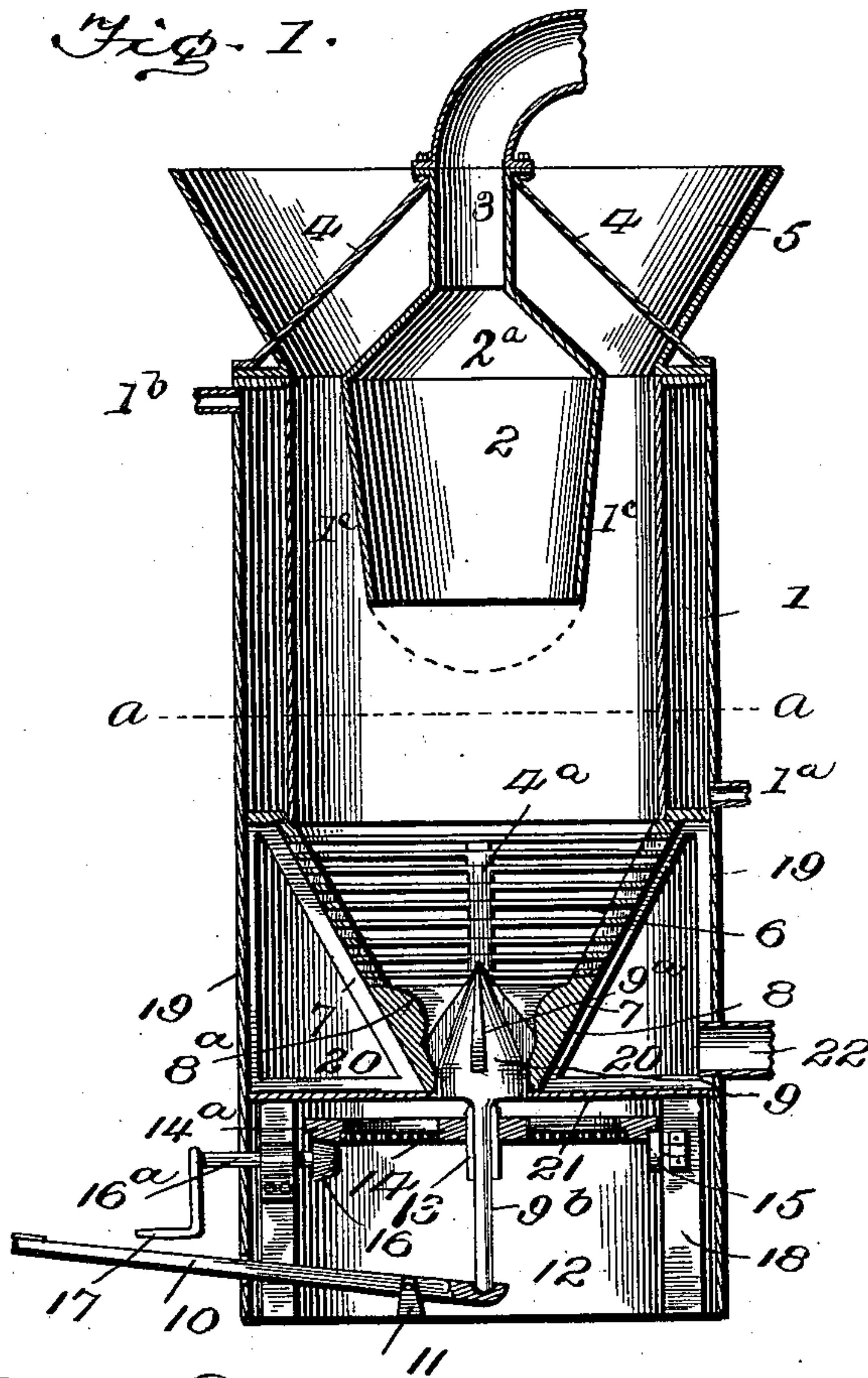


Fig. 2.

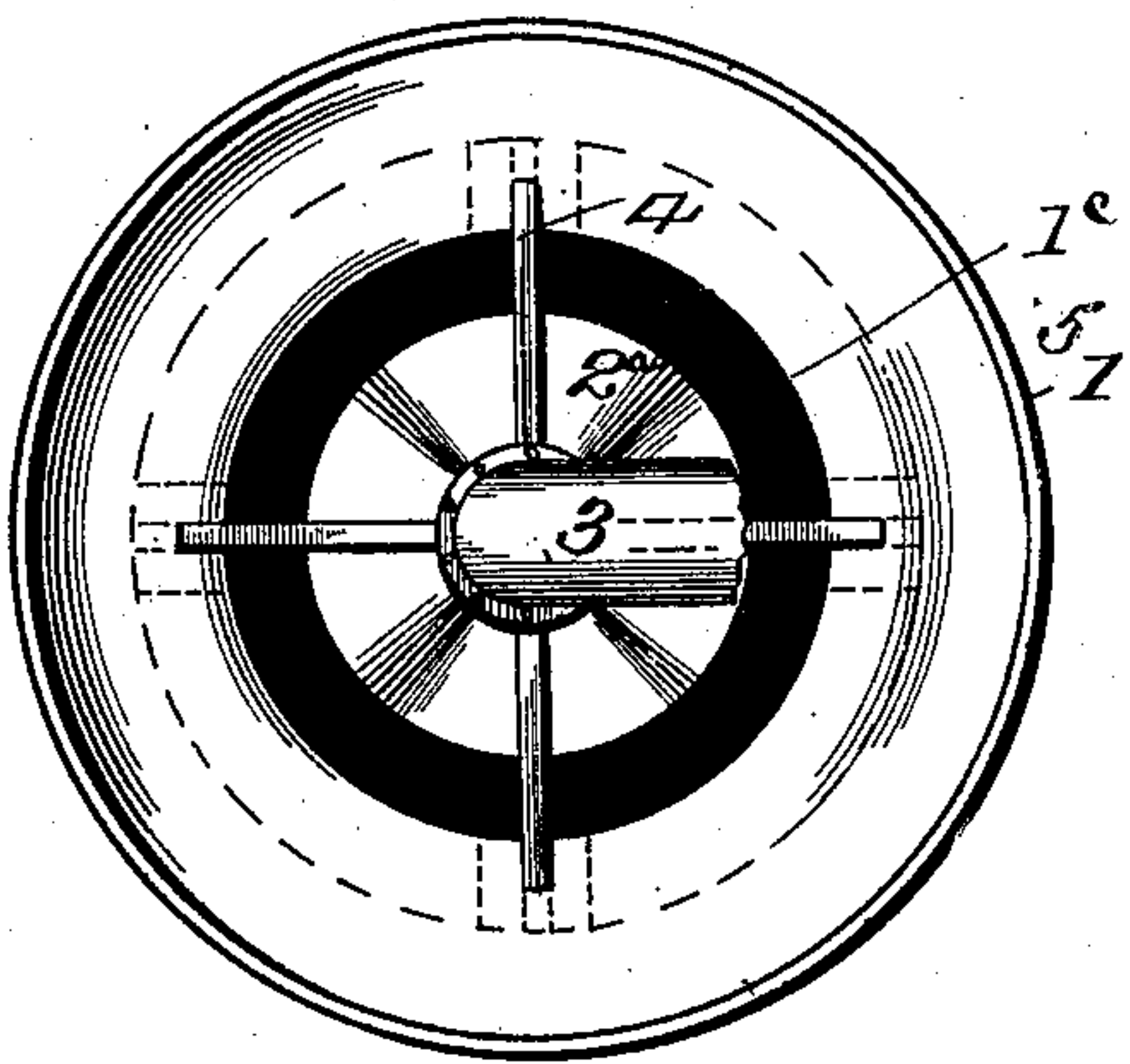
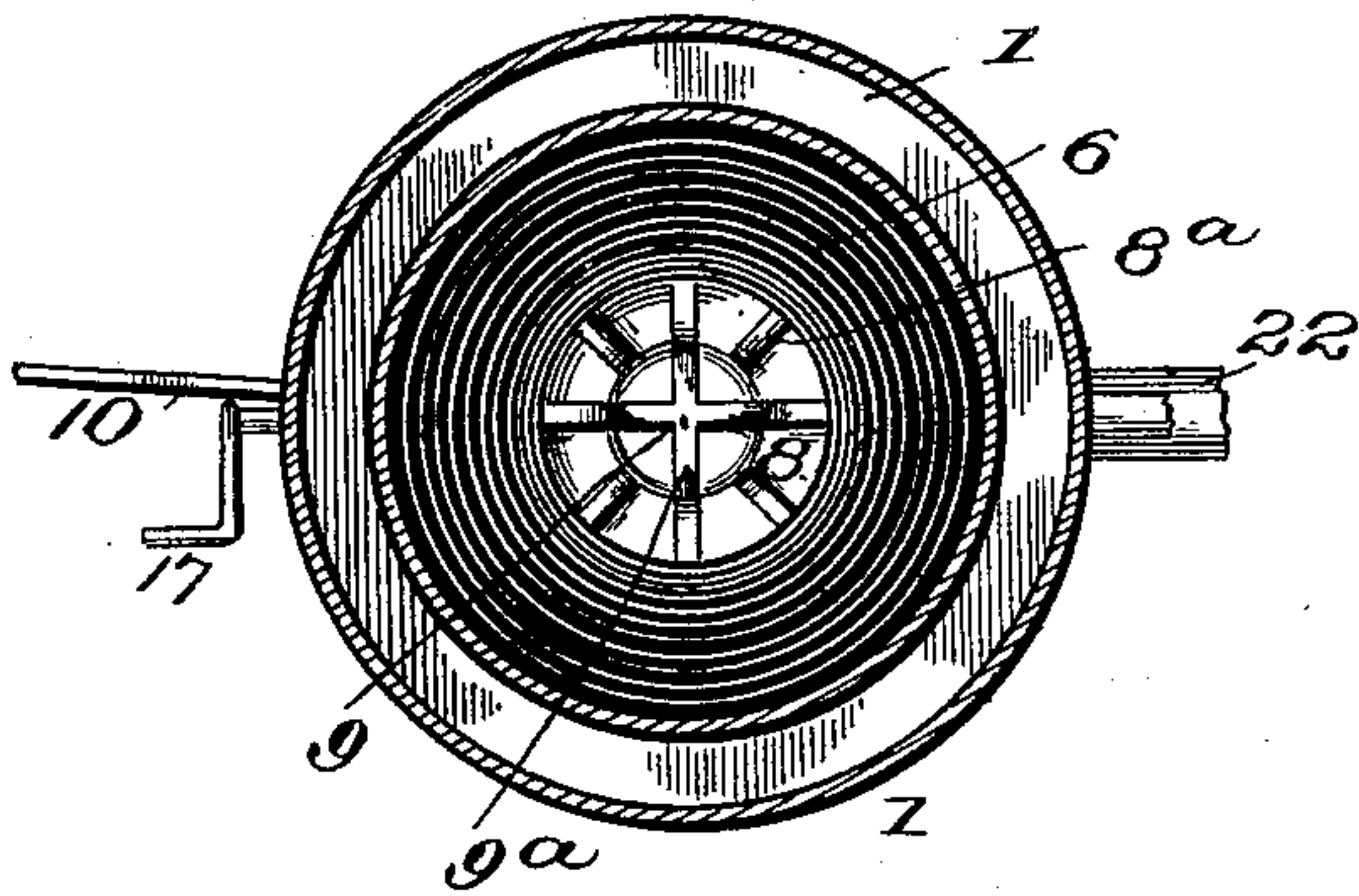


Fig. 3.



Witnesses

John D. Munnie
Herbert Bradley

Inventor

James G. Sanderson

by Knight Bros
his Attorneys

UNITED STATES PATENT OFFICE.

JAMES GARDNER SANDERSON, OF SCRANTON, PENNSYLVANIA.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 600,954, dated March 22, 1898.

Application filed February 10, 1897. Serial No. 622,816. (No model.)

To all whom it may concern:

Be it known that I, JAMES GARDNER SANDERSON, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Producers, of which the following is a specification.

My present invention relates to a cylindrical gas-producer so constructed that a continuous supply of fuel may be delivered around and adjoining the side of the combustion-chamber and is a modification of the construction shown, described, and claimed in my application, Serial No. 618,360, filed January 7, 1897, having the same object in view.

In order that my invention may be fully understood, I will proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is a vertical section of my improved producer; Fig. 2, a top view thereof; and Fig. 3, a section taken on the line *a a*, Fig. 1.

In the said drawings, 1 represents a cylindrical shell having the general form of a boiler with inlet 1^a for water at the bottom and an outlet 1^b at the top, and, if preferred, it may be constructed of fire-brick.

2 is a downwardly-converging metal cylinder of varying diameters having its greatest diameter in a plane level with the top of the shell 1. It is formed with a conical top 2^a and a pipe extension 3, the whole forming an outlet for the gas. This cylinder is supported centrally within the shell 1 to provide an annular downwardly-flaring magazine-feeder 1^c by means of the wings 4, which rest upon the shell 1, as shown.

5 represents an inverted conical metal shell forming a hopper around the conical portion of cylinder 2 and pipe 3.

6 represents a downwardly-converging fire-pot composed of metal rings which are spaced apart by means of the lugs or projections 4^a, and the rings are supported by the metal frames 7, which also aid in supporting the upper portion of the producer. These frames are arranged in any preferred manner and rest upon the plate 21, secured by any means to the shell 1. The fire-pot 6 is contracted toward the lower part and terminates in a

grinding-pot 8, which is provided with ribs 8^a and with an opening at the bottom. Filling this opening and extending up into the fire-pot is a conical plug or valve 9, which also has ribs 9^a on its upper surface.

9^b represents an extension or shaft connected with the plug or valve which is supported on the end of a lever 10, fulcrumed at 11 and extending outside of the ash-pit 12. This shaft is provided with one or more elongated feathers 13, which fit loosely within slots formed in the hub 14 of a toothed wheel 14^a, which is supported on small wheels 15, journaled to the interior supports of the producer, as shown.

16 is a pinion carried on a shaft 16^a, which extends outside of the ash-pit and is provided with a crank 17 or other means for turning the shaft.

18 represents supports for the lower part of the producer located in the ash-pit, which is inclosed by the metal shell 19. This shell is provided with doors for removing ashes and for access to the ash-pit.

20 represents an air and steam chamber surrounding the fire-pot, which is formed by it and the outer shell 19 and bottom-plate 21, and it is provided with an inlet 22, through which air and steam are admitted for use in the production of gas.

The operation of the gas-producer is as follows: A fire is built in the fire-pot in the usual way and the hopper 5 continuously supplied with such carboniferous material as desired for gas production, so that the furnace is kept filled with the material up to the curved dotted line shown in Fig. 1. Air to maintain combustion and steam for decomposition is supplied through the opening 22 into the chamber 20, where they become superheated by contact with the exterior of the fire-pot, and, passing through the openings between the rings, penetrate all parts of the fuel-bed. The resulting gas, consisting largely of carbonic oxid and hydrogen, passes off through the outlet 3. The rings being horizontal and of sufficient width and the spaces between them being narrow, no ashes will fall through into the chamber 20, and the steam and air being under considerable pressure will always keep the spaces open and free from clinker. When it is desired to remove the ashes, the

plug or valve is raised by means of the lever 10 and rotated by turning the shaft and pinion 15, which, being geared with wheel 14, revolves that, which in turn revolves the plug.

5 The ribs on the bottom of the fire-pot will break up any clinker which may be too large to fall through the opening formed by raising the plug. The plug or valve may be raised and rotated in any other convenient
10 manner.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In a gas-producer, the combination of
15 the cylindrical shell, a hopper located on the top thereof, a cylinder centrally supported within the shell, a fire-pot, and a plug or valve fitting in the lower end thereof and provided with means for raising and rotating
20 it, substantially as shown and described.

2. A gas-producer comprising a downwardly-converging fire-pot built up of spaced rings, a grinding-pot beneath the fire-pot, the con-

ical grinding-plug located in the grinding-pot, and means for rotating and raising the
25 plug; substantially as described.

3. A gas-producer comprising a cylindrical shell, an inverted conical shell providing a hopper, the downwardly-converging cylinder
30 having a conical top, the downwardly-converging fire-pot built up of spaced rings, a grinding-pot located beneath the fire-pot, the conical grinding-plug located within the grinding-pot, and means for rotating and raising
35 the plug; substantially as described.

4. In a gas-producer, the combination of the cylindrical shell, the hopper therefor, a fire-pot composed of rings spaced apart and arranged in an inverted-cone position, and a
40 movable plug located at the bottom of said fire-pot, substantially as shown and described.

JAMES GARDNER SANDERSON.

Witnesses:

F. L. HITCHCOCK,

H. P. HITCHCOCK.