No. 671,892. Patented Apr. 9, 1901.

A. LAUGHLIN.

GAS PRODUCER.

(Application filed Aug. 13, 1900.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1.

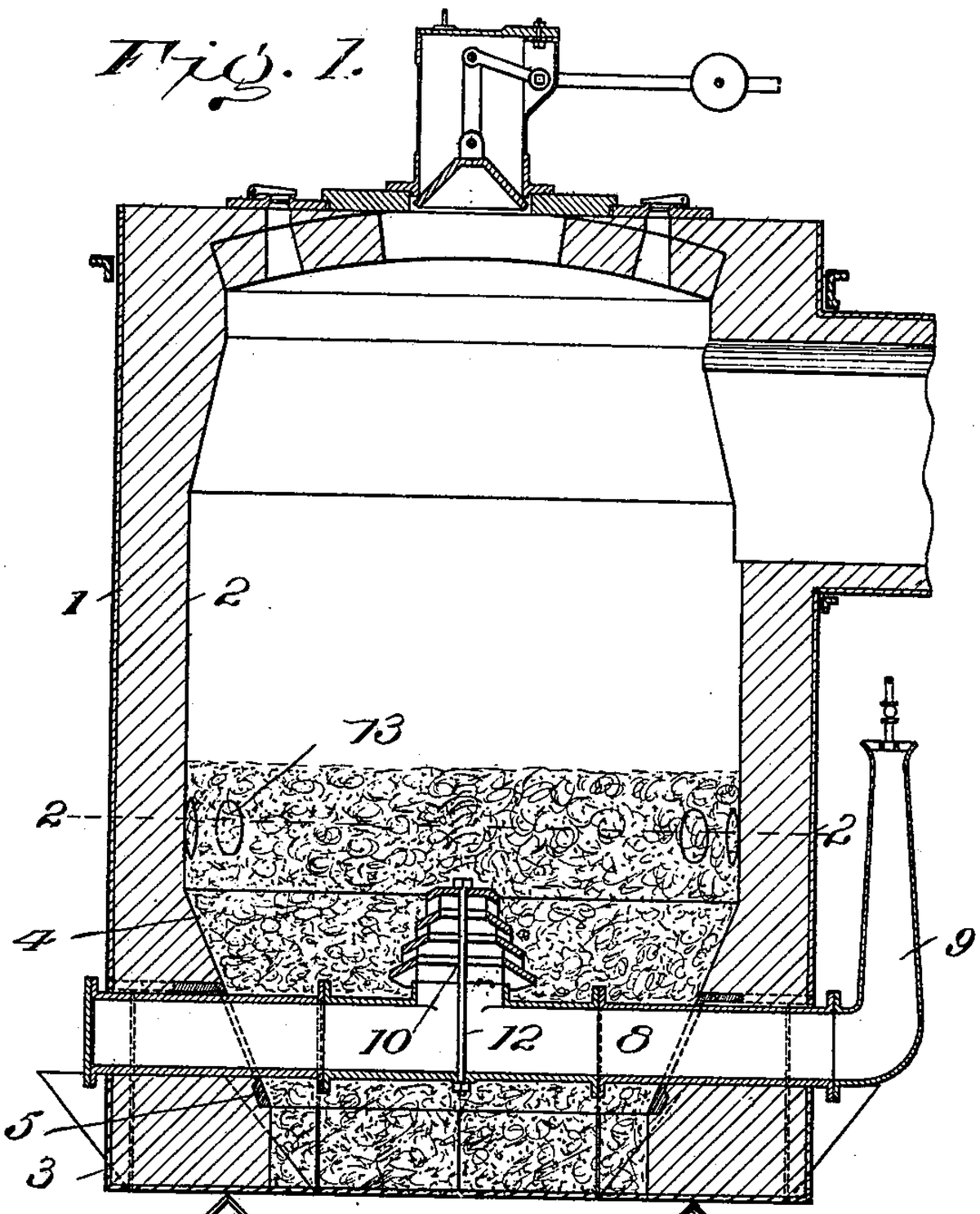
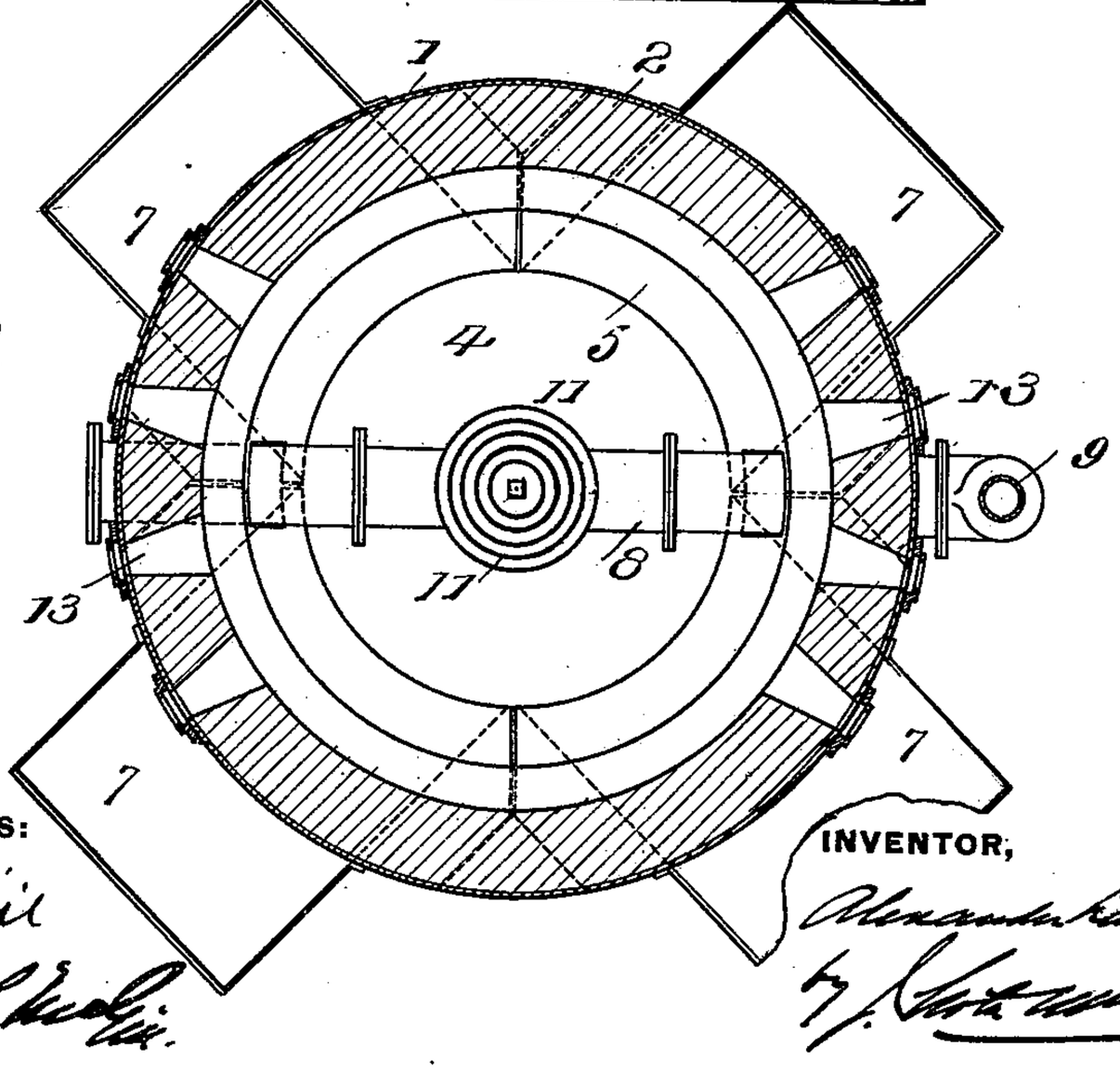


Fig. 2.



WITNESSES:

INVENTOR,

Alexander Laughlin,

by [illegible]

Att'y.

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4 Sheets—Sheet 2.

Fig. 3.

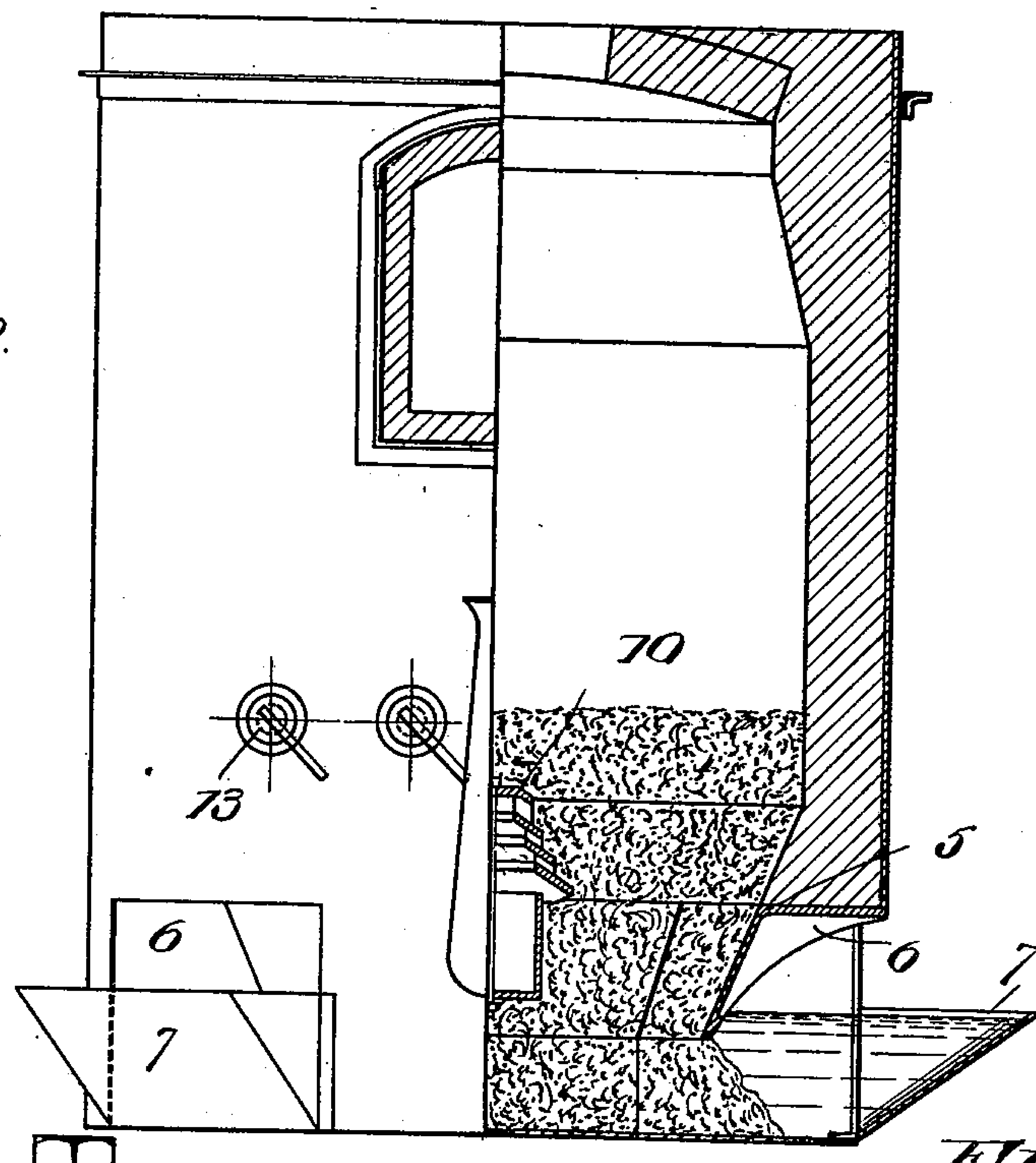


Fig. 4.

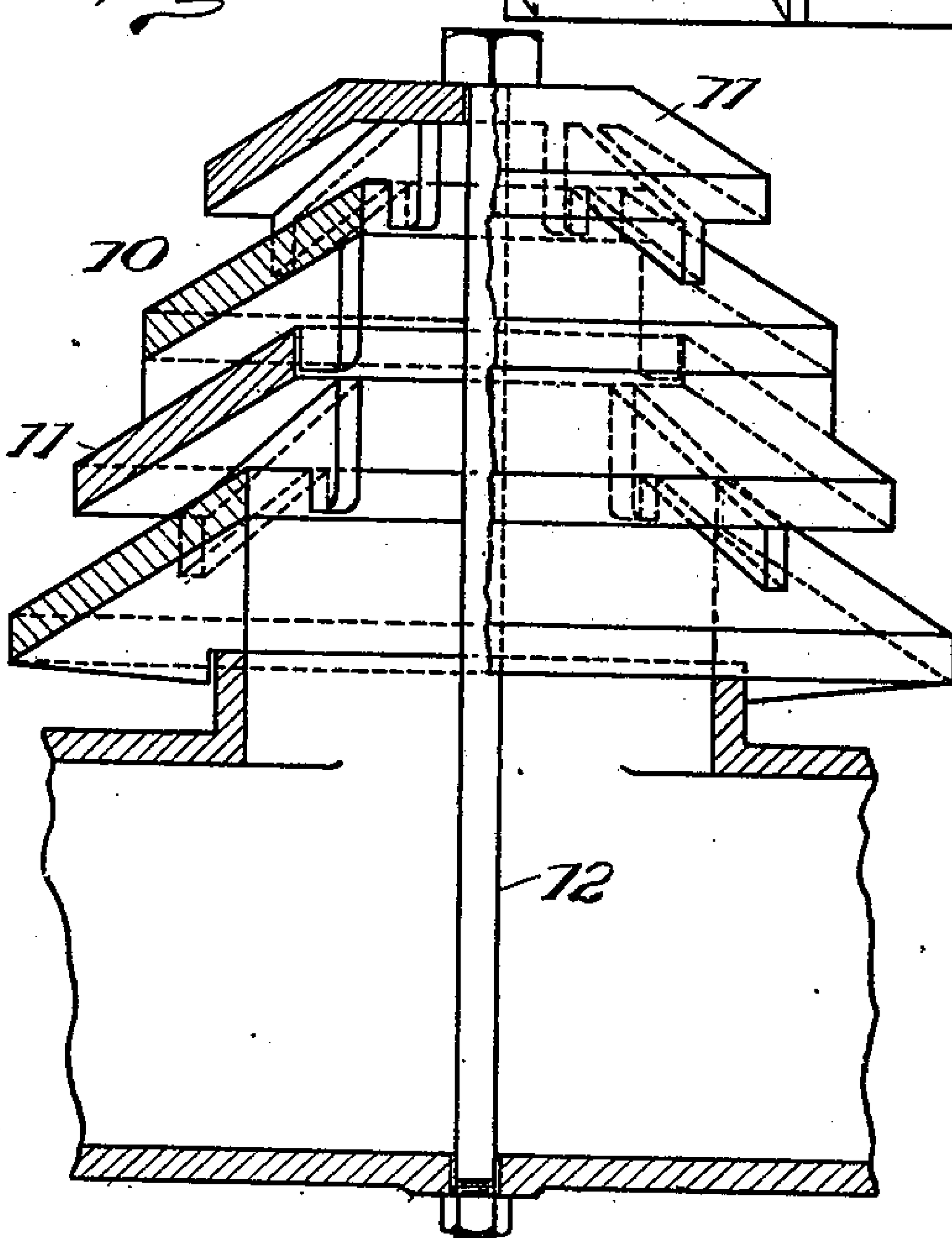
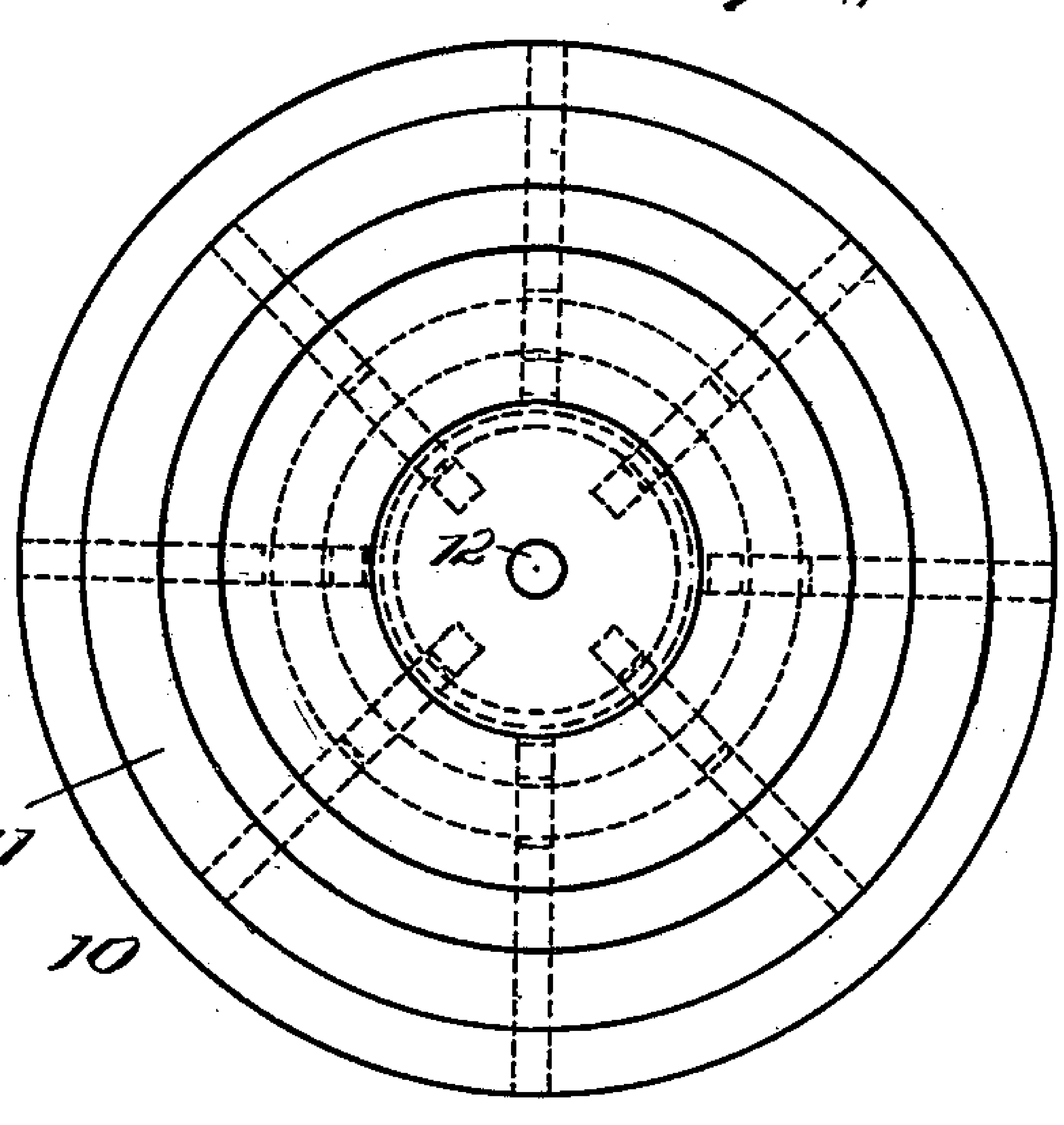


Fig. 5.



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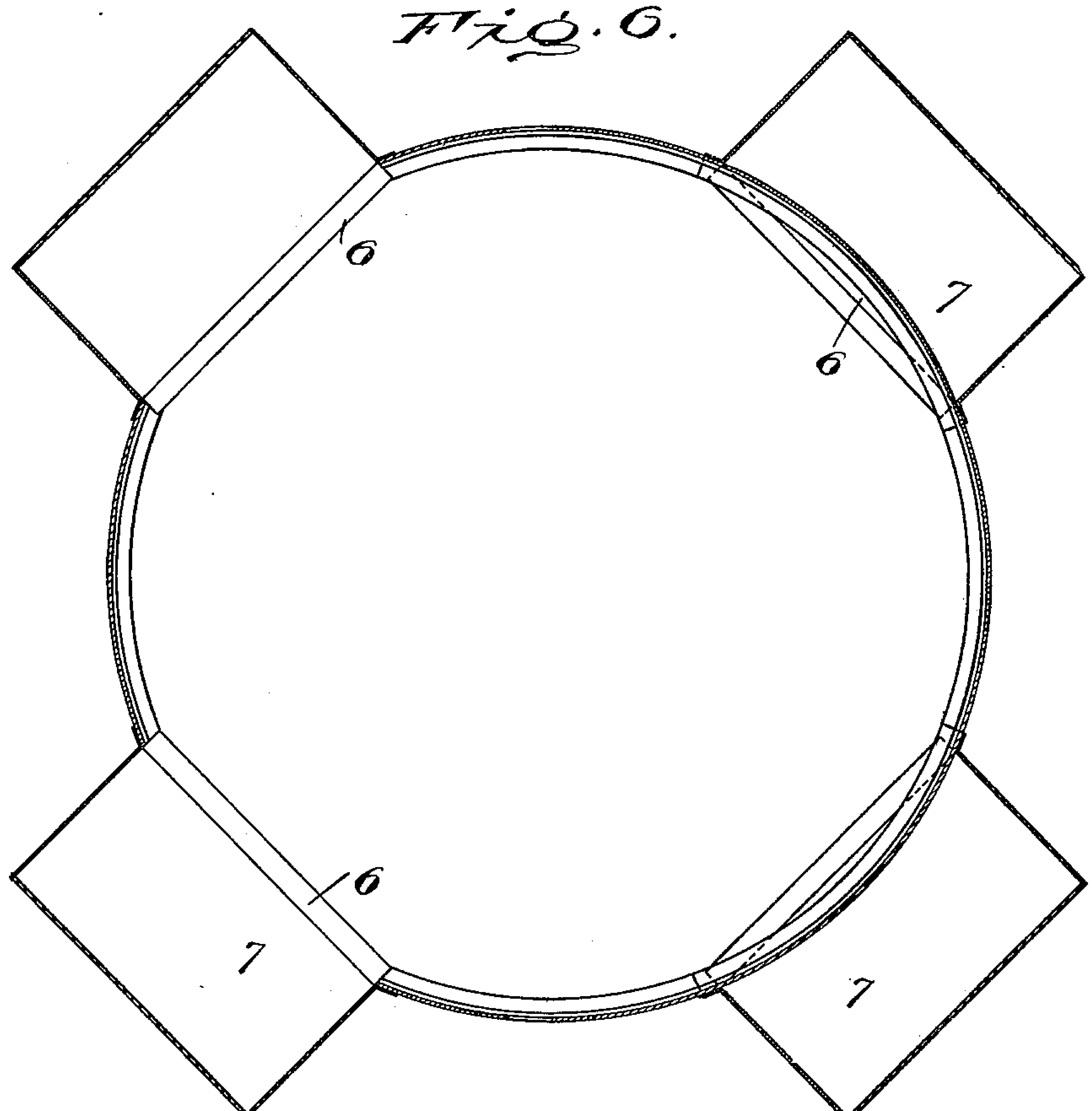
(Application filed Aug. 13, 1900.)

(No Model.)

4 Sheets—Sheet 3.

Fig. 6.



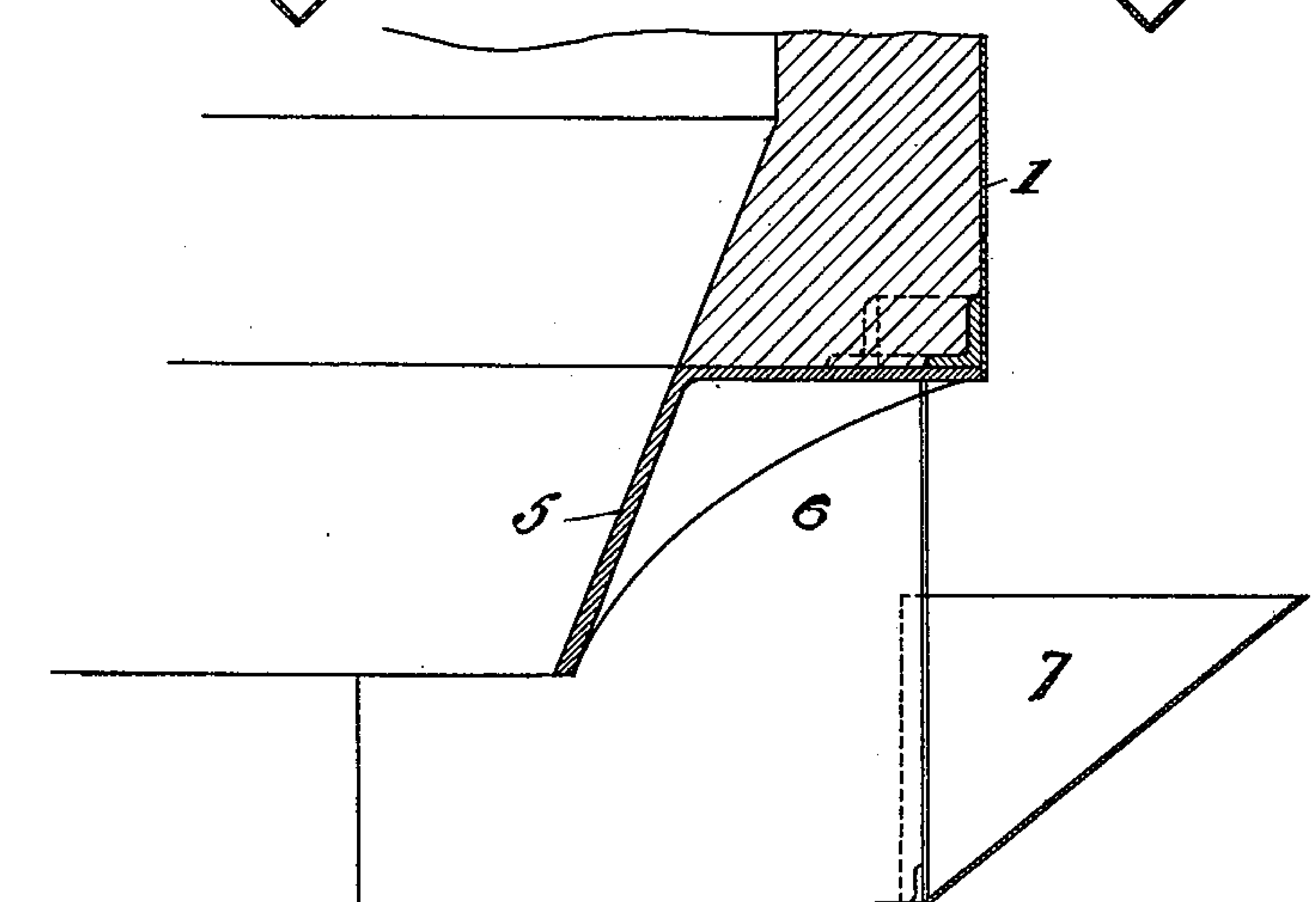


Fig. 7.

WITNESSES:

[signatures]

INVENTOR,

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A. LAUGHLIN.

GAS PRODUCER.

(Application filed Aug. 13, 1900.)

(No Model.) 4 Sheets—Sheet 4.

Fig. 8.

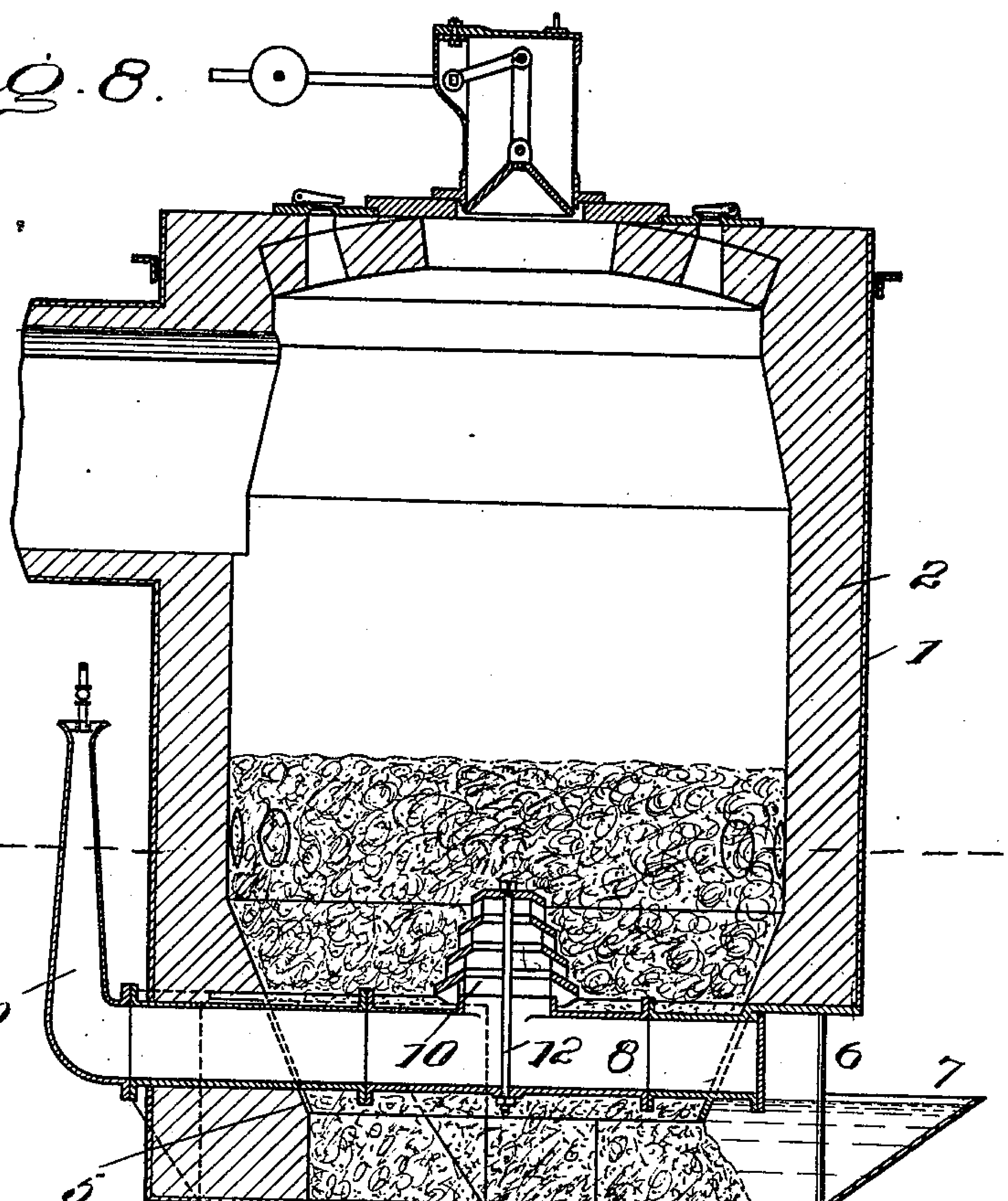
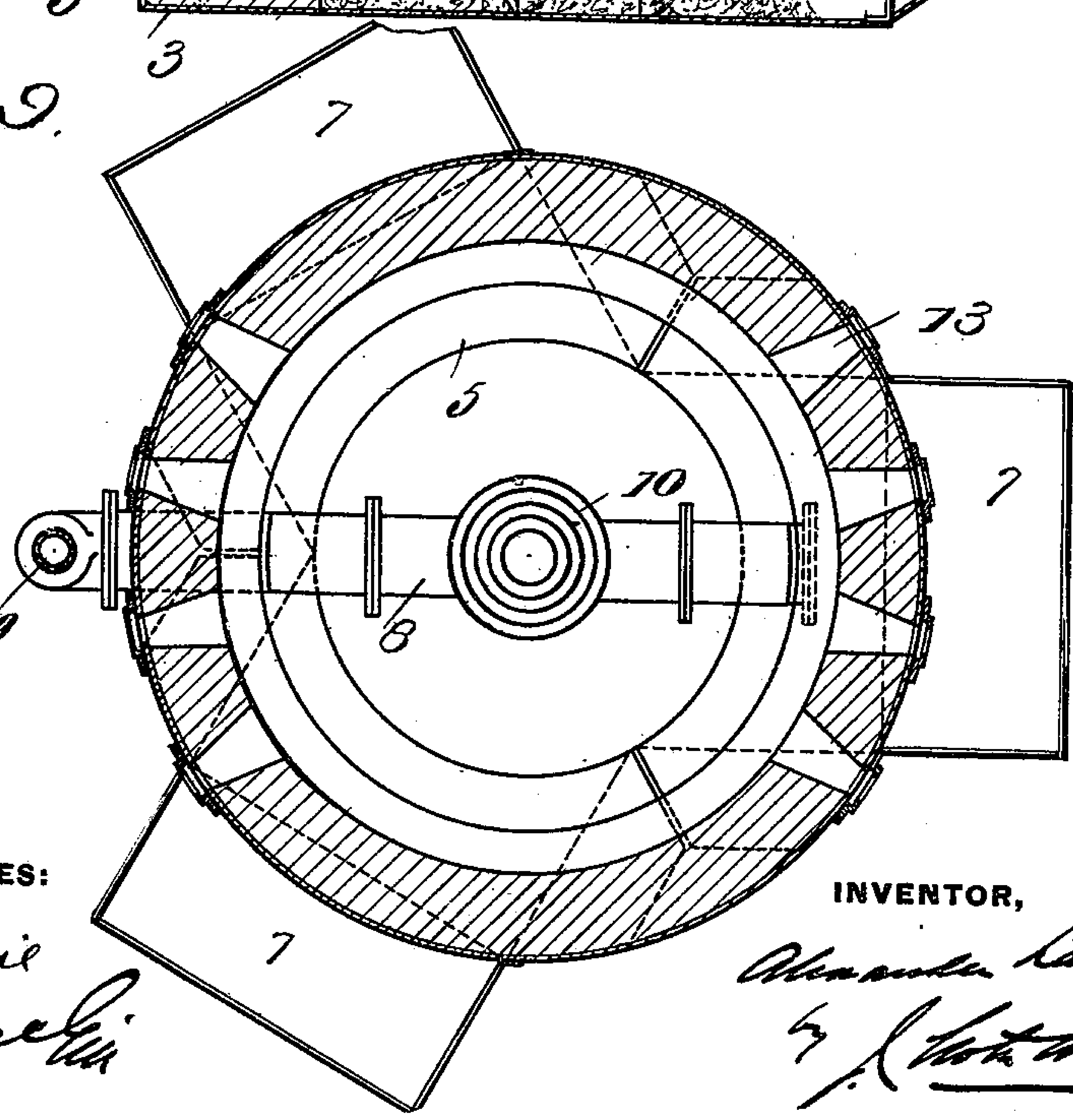


Fig. 9.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALEXANDER LAUGHLIN, OF SEWICKLEY, PENNSYLVANIA.

GAS-PRODUCER.

SPECIFICATION forming part of Letters Patent No. 671,892, dated April 9, 1901.

Application filed August 13, 1900. Serial No. 26,754. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER LAUGHLIN, of Sewickley, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Producers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention contemplates certain new and useful improvements in gas-producers.

The objects are to provide a water-sealed gas-producer built in a water-tight tank or casing, rendering supporting-posts unnecessary; to enable the producer to be cleaned from a plurality of points and allow of access from one side of the producer to the other through each ash-removing opening; to permit the positioning of the blast-conduit on any desired line, either through the ash-removal openings or the spaces between such openings; to construct the ash-hopper so as to insure the positive descent of the ashes and the concentration thereof at the center of the producer, so that a shovel may be inserted clear to the center of the latter, and, finally, to improve, simplify, and cheapen the general construction of gas-producers.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a vertical sectional view of a gas-producer embodying my present improvements. Fig. 2 is a horizontal sectional view on line 2 2, Fig. 1. Fig. 3 is a view of the producer, partly in section and partly in side elevation. Fig. 4 is an enlarged vertical sectional view of the blast-cone. Fig. 5 is a plan thereof. Fig. 6 is a horizontal sectional view through the lower portion of the shell or inclosing casing. Fig. 7 is an enlarged sectional view through one of the ash-removing openings and the mantle which supports the brickwork above such openings and forms the water seal. Fig. 8 is a vertical section showing a modified arrangement for removal of ashes. Fig. 9 is a horizontal section on line 9 9, Fig. 8.

Referring to the drawings, 1 designates a metallic casing entirely surrounding and inclosing the brick lining 2, and connected, preferably by riveting, to a metallic bottom 3, which extends entirely beneath the producer, forming a water-tight shell. The ash-hopper 4 has a metallic lining consisting of curved or inverted-cone-like mantles 5, which completely cover the brick lining and insure the descent of the ashes and the concentration thereof at the center of the producer. In the wall of the producer are formed ash-removing openings 6. In these openings are located pans 7, which extend above the lower ends of the mantles 5, which latter carry the brickwork across each of the openings. Four such openings are preferable in large producers, although three may suffice with producers of less capacity. (See Figs. 8 and 9.) These openings form continuations of the ash-pans, and their opposite side walls are carried inward, so that the walls of each opening meet the side walls of the adjacent openings, the points of meeting being at the smallest diameter of the ash-hopper. The spaces between the side walls of the openings are covered by the ash-hopper mantles. The shell being water-tight, the producer is absolutely self-contained, thus rendering it possible, when necessary, to move the producers without removal of lining.

The air-blast box or conduit 8 is carried free from one side of the producer to the other. It may be passed horizontally between the meeting portions of the ash-removal openings (see Fig. 2) or in direct line with two such openings when four are employed or in line with one opening and between the two others when three are used. (See Fig. 9.) This adaptability of location of the air-blast box or conduit is specially advantageous, since the blast-pipe 9 occupies considerable space and its location is often controlled by local conditions. The blast-conduit being passed transversely through the producer, so as to intersect the ash-hopper above the lower end of the latter, a clear space is left between it and the bottom of the shell, permitting access to be had from one side of the producer to the other, thus allowing the cleaning to be done through any one of the openings.

The distributer 10 is of approximately cone shape and is composed of a series of sections 11 bolted together and to the central section of the blast-conduit by a bolt 12. The several sections are built one upon another with intervening escape-passages. The number of sections may be increased or lessened according to the size and depth of the producer, and any one section may when burned out be readily replaced.

Within the producer are formed several observation or poker holes 13, which are tapered, so that their diameter is very much greater at their inner ends than at the outside of the producer. This is advantageous in poking the fire, permitting a poker to be moved over a large area.

The advantages of my invention are apparent to those skilled in the art. Dispensing with supporting-legs and making the producer self-contained and water-tight and yet capable of being thoroughly cleaned from any one of the several openings, access being permitted beneath the blast-conduit, are features of special importance, as is also the adaptability of the producer to receive the air-blast on any line.

By providing curved and tapered mantles as a lining for the ash-hopper the ashes are concentrated at or directed toward the center of the producer. The blast-conduit being passed transversely through the producer and intersecting the ash-hopper, so as to leave a clear space between itself and the bottom of the producer, an operator in removing ashes may insert his shovel clear to the center of the producer. This is an advantage not possessed by any other form of gas-producer known to me.

I claim as my invention—

1. A gas-producer comprising a body, an ash-hopper therein tapered uniformly toward the center thereof, and a water-tight metallic bottom extending beneath and forming part of the producer, two or more ash-removal openings being formed in the body above the bottom extending from the tapered ash-hopper to form water seals within such body around such hopper, access beneath the hopper being had through ash-removal openings.

2. A gas-producer comprising a body, an ash-hopper therein tapered uniformly toward the center thereof, a metallic casing inclosing said body and extending beneath and forming the bottom of the producer, and a water seal surrounding the ash-hopper within the body above the bottom, two or more ash-removal openings extending from the ash-hopper being formed in the body and its inclosing casing in line with the water seal.

3. A gas-producer comprising a metallic casing, an inclosed lining, said metallic casing extending beneath the lining and forming the bottom of the producer, and an ash-hopper having a curved or tapered metallic lining, a water seal being formed around the ash-hopper within the body and above the bottom, and a series of ash-removal openings extending through the inclosing lining and casing from the lining of the ash-hopper.

4. A gas-producer having a metallic casing inclosing its body, a metallic bottom beneath and permanently secured to such body forming a part thereof, a water seal being formed in the body above the bottom, and a series of three or more ash-removing openings extending through the body and casing from the ash-hopper, said ash-removing openings being of such width that the ends of the side walls of adjacent openings unite at their inner ends in line with the ash-hopper.

5. A gas-producer having its ash-hopper provided with a curved or tapered metallic lining, and a series of three or more ash-removing openings of such width that the inner ends of the side walls of adjacent openings unite in line with the said lining, as set forth.

6. A gas-producer having its body formed with a series of three or more ash-removing openings, mantles supporting the brickwork over said openings, said mantles being curved and tapered to form the lining of the ash-hopper, and a series of ash-pans within said openings, said openings being of such width that the sides of adjacent openings unite at their inner ends, substantially as set forth.

7. In a gas-producer having a water-tight bottom permanently secured to and forming a component part of the producer-body, and a series of three or more ash-removing openings extending from their inner ends in line with the ash-hopper through the producer-body, a blast-conduit passed entirely through the ash-hopper and body clearing the bottom of the latter at every point so that access may be had through each of the several openings beneath such conduit, substantially as set forth.

8. In a gas-producer having a water-tight bottom permanently secured to and forming a component part of the producer-body, and a series of three or more ash-removing openings connected together at their inner ends, ash-pans located in said openings, and a horizontally-disposed blast-conduit passed through the producer, intersecting such openings, a continuous clear space being left between said conduit and said bottom, substantially as set forth.

9. In a gas-producer having its body formed with an ash-removing opening or openings, a curved or tapered metallic lining for the ash-hopper, and a blast-conduit passed transversely through the producer intersecting the hopper above the bottom of the producer, substantially as set forth.

10. A gas-producer having its body formed with a series of three or more ash-removing openings of such width that the ends of the

side walls of adjacent openings unite at their inner ends in line with the ash-hopper, a curved and tapered lining for such hopper, and a blast-conduit passed transversely through the producer intersecting the hopper above the bottom of the producer, substantially as set forth.

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

ALEXANDER LAUGHLIN.

Witnesses:

C. W. COFFMAN,

L. H. GORDON.