

A. W. JONES.

GAS GENERATOR FOR EXPLOSIVE ENGINES.

APPLICATION FILED OCT. 14, 1904.

3 SHEETS—SHEET 1.

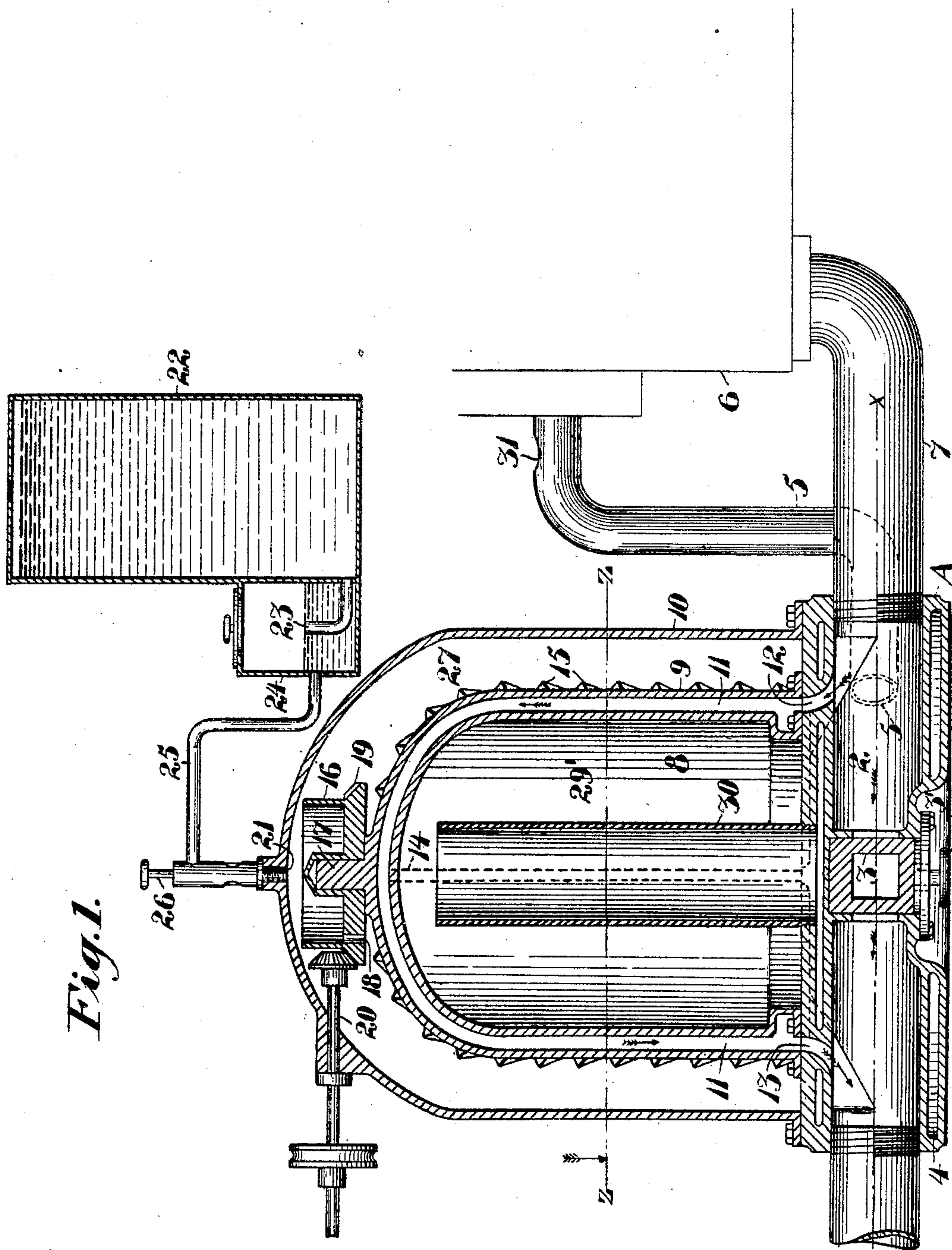


Fig. 1.

Witnesses:-

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Inventor.

Adolph W. Jones
By Geo H. Strong atty

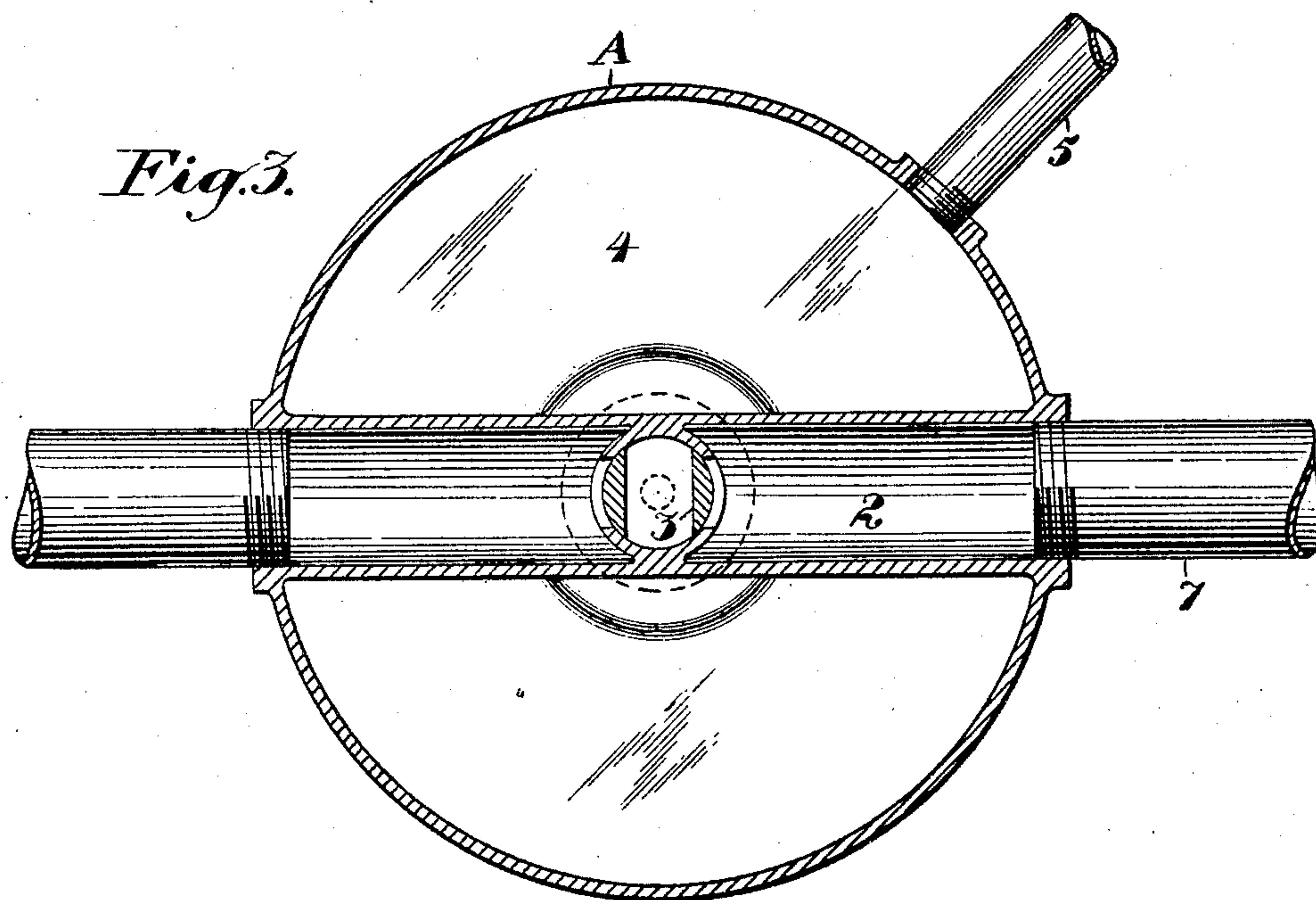
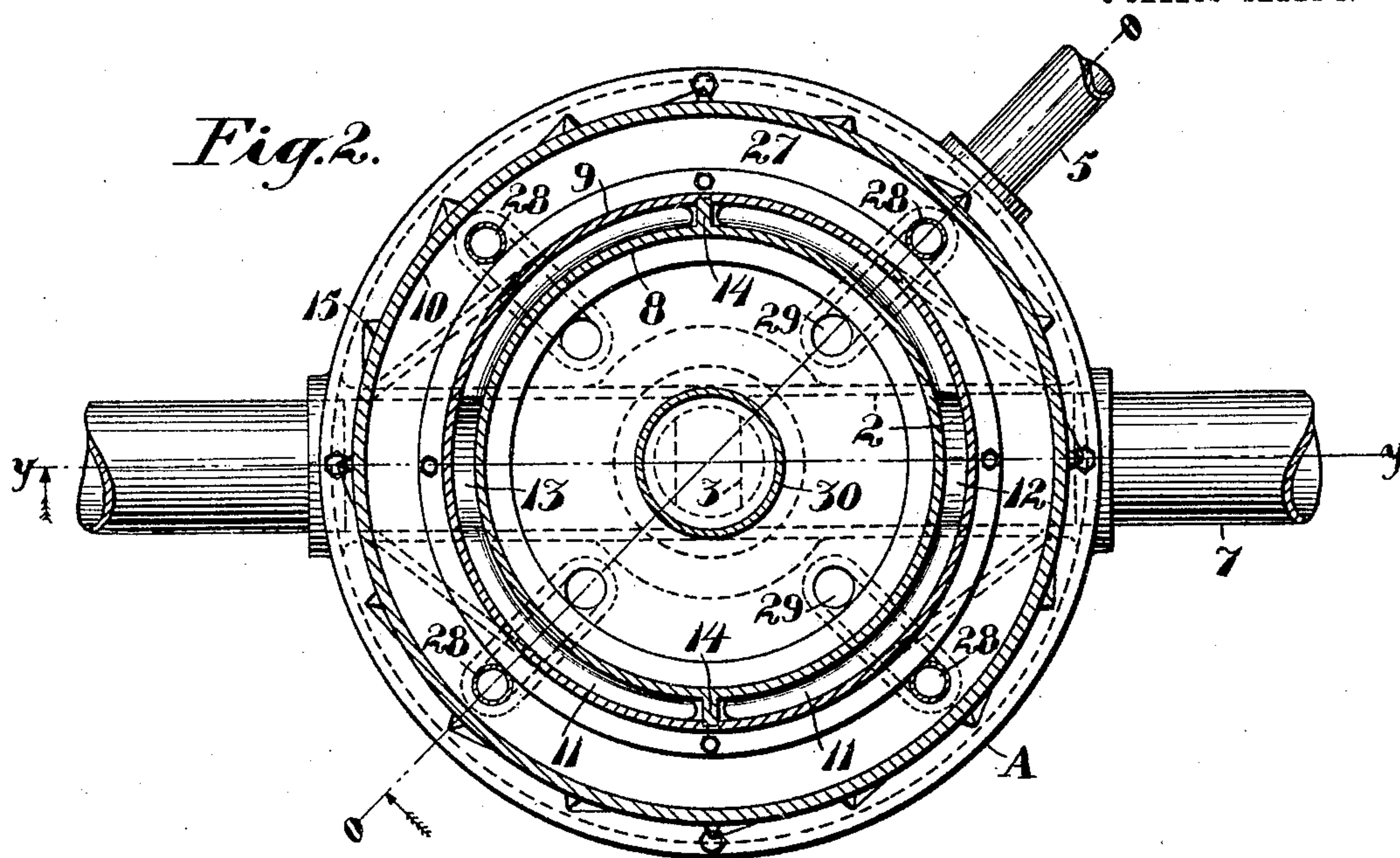
No. 799,341.

PATENTED SEPT. 12, 1905.

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3 SHEETS—SHEET 2.



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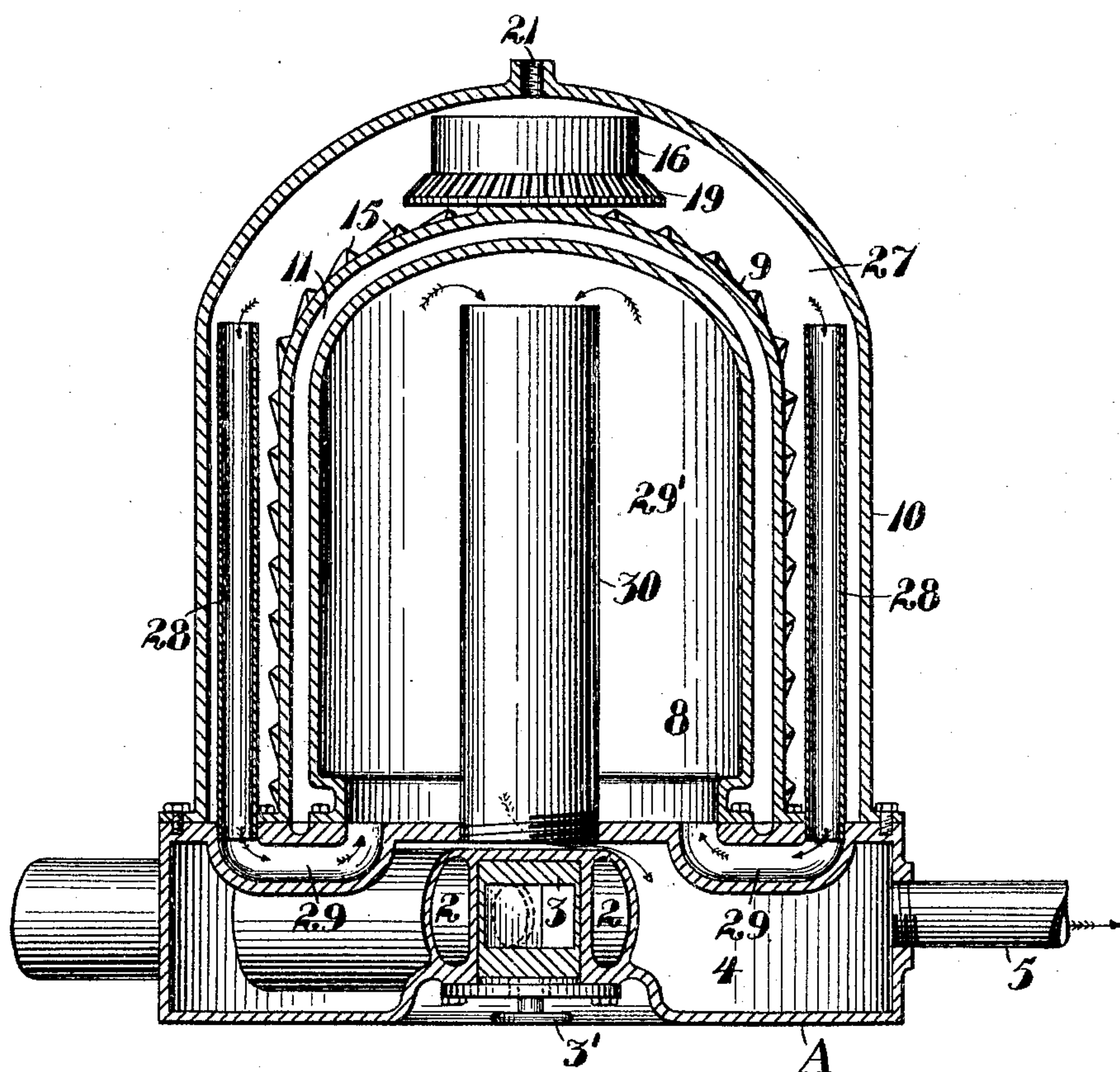
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3 SHEETS—SHEET 3.

Fig. 4.



Witnesses:-

J. C. Fiedner
J. H. Brown

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UNITED STATES PATENT OFFICE.

ADOLPH W. JONES, OF ALAMEDA, CALIFORNIA.

GAS-GENERATOR FOR EXPLOSIVE-ENGINES.

No. 799,341.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed October 14, 1904. Serial No. 228,422.

To all whom it may concern:

Be it known that I, ADOLPH W. JONES, a citizen of the United States, residing at Alameda, in the county of Alameda and State of California, have invented new and useful Improvements in Gas-Generators for Explosive-Engines, of which the following is a specification.

My invention relates to an apparatus for converting liquid hydrocarbons into a suitable gas for use in explosive-engines.

The object of my invention is to provide an apparatus whereby may be produced a cheap practical gas and which shall utilize the heat of the exhaust from the engine to assist in the vaporization of the hydrocarbons, such as petroleum distillate and the like, which are not very volatile under normal conditions.

The invention consists of the parts and the construction and combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawings, in which—

Figure 1 is an elevation in partial section of my invention, showing its application as taken on line *y y* of Fig. 2. Fig. 2 is a sectional view on line *z z* of Fig. 1. Fig. 3 is a section on line *x x* of Fig. 1. Fig. 4 is a vertical section on line *o o* of Fig. 2, but showing the rotary distributor in elevation.

A represents the base of my carbureter or generator having an exhaust-passage 2 extending through it controlled by a suitable valve 3 and a separate chamber 4, connected by the pipe 5 with the inlet of the gas-engine 6. The valve 3 is here shown of the plug type, operated by a suitable hand-wheel 3'. One end of the passage 2 is connected by a pipe 7 with the exhaust-port of the engine, and the opposite end may be opened to the atmosphere.

Suitably secured or clamped to the base, so as to be separately removable, are the concentric spaced domes 8 9 10. The domes 8 and 9 inclose a heating-chamber 11, connected through the port 12 with passage-way 2 on one side of valve 3 and through the port 13 with the same passage-way on the other side of said valve. The outside of the inner dome 8 is provided with the two opposed vertical flanges 14, which fit in corresponding grooves on the inside of dome 9 and extend nearly to the top of the domes. These flanges form partitions which serve to divide the chamber 11 into two compartments connected at the top, so that the vapors entering through port 12 will be al-

lowed to spread over one-half of the area of the two domes and then pass over the top and again spread out through the space between the domes on the opposite side of the partitions 14, issuing thence through port 13 into the passage-way 2. Obviously the partitions 14 could be carried by the dome 9, it being immaterial how they are made or supported so long as one dome can be removed separately from the other and the suitable distribution of the gases as indicated is provided for.

The outside of dome 9 is studded with series of projections 15, preferably A-shaped and arranged in staggered position up and down the dome and affording suitable baffles to obstruct the flow of the oil to be vaporized, which is fed by suitable means upon the top of the dome 9. I prefer to use a feeding device which will distribute the liquid to be vaporized around the entire surface of the dome 9. For this purpose I employ an annular cup 16, mounted to turn on the stud 17, carried by and in axial alinement with the dome 9. The bottom of the cup has a perforation 18 for the escape of the liquid upon the top of the dome. The outside of the cup carries a bevel-gear 19, which meshes with a corresponding gear on the shaft 20, running in suitable bearings in the outer dome 10 and operated from any suitable source of power. The liquid fuel to be vaporized is fed in through the top of dome 10 and into distributing-cup 16 through a suitable valved inlet 21. This inlet may connect with any suitable source of supply. I prefer to use an automatic supply device, as here shown, and which comprises a tank 22, adapted to be filled and closed, so as to be rendered air-tight, and having a short upturned discharge-pipe 23 at or near its bottom, opening into a smaller supplemental chamber 24, which latter is open to the atmosphere. A pipe 25 connects the inlet-passage 21 of the generator with chamber 24 below the horizontal plane of the end of pipe 23.

The liquid from chamber 22 will flow into chamber 24 until the end of the pipe 23 is covered. Whenever the level of the liquid in chamber 24 is reduced below the level of the end of the pipe 23, air will pass through pipe 23 into chamber 22 and allow a proportionate amount of liquid to flow into chamber 24, thus maintaining the liquid-level in chamber 24 at practically uniform height and at substantially a uniform pressure relative to the suction means by which the liquid is

drawn from chamber 24 into cup 16. The amount of oil admitted to the generator is regulated by a suitable valve 26. With the shaft 20 revolving constantly and with the engine running and valve 26 open a stream of liquid is delivered at successive points around the top of dome 9. As the latter is practically heated equally over its surface, the oil is acted on to the very best advantage, since it does not flow with sufficient quantity nor with sufficient continuity upon any one spot of the heating-surface to cool that spot to any appreciable degree.

The space 27 between the domes 9 and 10 constitutes the vaporizing-chamber, wherein the oil distributed by the rotary feeder over the surface of the dome 9 is converted into a gas, from thence to be conveyed on successive suctions of the engine through the vertical pipes 28 in the vaporizing-chamber and ports 29 in the base beneath the heating-chamber 11 and into the central superheating-chamber 29'. In this last-named chamber the gas is heated and dried by reason of the radiated heat from chamber 11 passing through the walls of the inner dome 8. From the superheater chamber 29' the gas may pass through a large stand-pipe 30 in the chamber 4 in the base and thence by pipe 5 to the engine. The pipe 5 may be provided with a suitable air-inlet, as 31, to supply sufficient oxygen to form the proper explosive mixture. Thus it is seen that the heat from the exhaust when passing through port 12 and chamber 11 and out again through port 13 thoroughly heats up the apparatus and causes a rapid change into vapor of the liquid fuel delivered by the rotary distributor upon the exterior of dome 9. Each successive suction by the engine draws in a charge of liquid from tank 24 into the apparatus, takes the gas from the vaporizing-chamber 27 into the superheating-chamber 29', and thence sucks it through the channels mentioned into the combustion-chamber.

In the event of the generator becoming too hot or for any other reason that it is desired to cut out the exhaust from chamber 11 the valve 3 may be opened to allow the exhaust-vapors to by-pass through passage 2 directly to the outer atmosphere.

It is obvious that various modifications in the form of this apparatus are possible without departing from the principle of my invention, and I do not wish to be understood as limiting myself to the specific construction herein shown and described.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A gas-generator for explosive-engines comprising the combination of a plurality of substantially concentric spaced domes forming a vaporizing-chamber, a superheating-chamber and an intermediate heating-cham-

ber, said heating-chamber connected with the exhaust of the engine, connections between the vaporizing and superheating chambers and with the inlet of the engine, and means for delivering liquid to be gasified into said vaporizing-chamber.

2. A gas-generator for explosive-engines comprising the combination of a plurality of substantially concentric spaced domes forming a vaporizing-chamber, a superheating-chamber and an intermediate heating-chamber, said heating-chamber connected with the exhaust of the engine, connections between the vaporizing and superheating chambers and with the inlet of the engine, and means for delivering liquid to be gasified into said vaporizing-chamber, said delivery means including a rotary feeder, adapted to deliver the liquid to successive points on one of said domes.

3. A gas-generator for explosive-engines comprising the combination of a plurality of substantially concentric spaced domes forming a vaporizing-chamber, a superheating-chamber and an intermediate heating-chamber, said heating-chamber connected with the exhaust of the engine, connections between the vaporizing and superheating chambers and with the inlet of the engine, means for delivering liquid to be gasified into said vaporizing-chamber, said delivery means including a rotary feeder, adapted to deliver the liquid to successive points on one of the intermediate domes, a source of liquid-supply and means controlled through the medium of the suction of the engine to automatically deliver liquid from said source of supply to said rotary feeder.

4. A gas-generator for explosive-engines comprising the combination of a plurality of substantially concentric spaced domes forming a vaporizing-chamber, a superheating-chamber and an intermediate heating-chamber, said heating-chamber connected with the exhaust of the engine, connections between the vaporizing and superheating chambers and with the inlet of the engine, means for delivering liquid to be gasified into said vaporizing-chamber, a source of liquid-supply and means controlled through the medium of the suction of the engine to automatically deliver liquid from said source of supply upon the dome of the heating-chamber.

5. A generator for explosive-engines which comprises the combination of a plurality of domes inclosing a vaporizing-chamber, a superheating-chamber and an intermediate heating-chamber, said heating-chamber connected with the exhaust of the engine, connections between the vaporizing-chamber and superheating-chamber and with the inlet of the engine, a valved by-pass by which the exhaust may be diverted from said heating-chamber and means for delivering liquid to be gasified into the vaporizing-chamber.

6. A generator for explosive-engines which

comprises the combination of a plurality of domes inclosing a vaporizing-chamber, a superheating-chamber and an intermediate heating-chamber, said heating-chamber connected
 5 with the exhaust of the engine, connections between the vaporizing-chamber and superheating-chamber and with the inlet of the engine, a valved by-pass by which the exhaust may be diverted from said heating-chamber
 10 and means for delivering liquid to be gasified into the vaporizing-chamber, said means including a rotary feeder, adapted to deliver the liquid to successive points on the dome of the heating-chamber.

15 7. In a gas-generator, the combination with a generating-chamber and a source of heat of a rotary feeder or distributor in said chamber, adapted to deliver a liquid to successive points on the source of heat and connections
 20 between said chamber and a source of liquid-supply.

8. In a gas-generator for explosive-engines, the combination with the generator-chamber and a source of heat, said generator-chamber
 25 connected with the inlet of the engine of a rotary feeder or distributor in said chamber adapted to deliver a liquid to successive points on the source of heat and means operable by the engine-suction to deliver liquid to said
 30 distributor.

9. In a gas-generator, the combination with a generator-chamber, of a rotary distributor in said chamber, a source of liquid-supply and means for delivering the liquid to said distributor, said distributor adapted to continuously deliver the liquid to successive points in the generator-chamber.

10. A gas-generator comprising three concentric domes inclosing outer and inner gas-chambers and an intermediate heating-chamber, a source of heat for said heating-chamber, means for delivering oil into the outer chamber to be vaporized, connections between the outer and inner chambers and connections between the inner chamber and the inlet of an engine.

11. A gas-generator for explosive-engines comprising the combination of a plurality of casings located one within the other and forming outer and inner connected gas-chambers and an intermediate heating-chamber, said heating-chamber connected with a source of heat, said gas-chambers connected with the inlet of the engine, and means operable by
 50 the engine-suction for automatically delivering liquid to be vaporized into the outer chamber.

12. A gas-generator for explosive-engines comprising the combination of a plurality of casings located one within the other and forming outer and inner connected gas-chambers and an intermediate heating-chamber, said heating-chamber connected with a source of heat, said gas-chambers connected with the
 60 inlet of the engine, means operable by the

engine-suction for automatically delivering liquid to be vaporized into the outer chamber and a rotary distributor in the outer chamber arranged in the path of the liquid-inlet.

13. The combination with a gas-generator
 70 for explosive-engines, said generator including spaced domes forming a heating-chamber connected with the exhaust of the engine and a generator-chamber connected with the inlet thereof, of means operable by the engine-
 75 suction to deliver oil automatically into the generator-chamber, said means including a receptacle adapted to contain liquid to be vaporized and closed except for an outlet near the bottom, a supplemental container open to
 80 the atmosphere into which said outlet discharges, and valved connections between the supplemental container below the normal liquid-level therein and the generator-chamber.

14. The combination with a plurality of
 85 spaced domes forming a heating-chamber connected with the exhaust of the engine and a generator-chamber connected with the inlet thereof, of means operable by the engine-suction to deliver oil automatically into
 90 the generator-chamber, said means including a receptacle adapted to contain liquid to be vaporized and closed except for an outlet near the bottom, a supplemental container open to the atmosphere into which said outlet dis-
 95 charges, valved connections between the supplemental container below the normal liquid-level therein and the generator-chamber, and a rotary distributor in the generator-chamber arranged in the path of the liquid-inlet, and
 100 adapted to deliver the liquid to successive points on one of the domes.

15. A gas-generator having a base portion provided with a valved passage connected with the exhaust of the engine, and a separate cham-
 105 ber connected with the inlet of the engine, a superstructure having a base portion forming substantially concentric heating and gas chambers, one of said gas-chambers being connected to the source of liquid-supply and
 110 the other gas-chamber being connected to the gas-chamber in the base, and said heating-chamber being connected with the valve-passage in the base on each side of the valve in said passage.

16. A gas-generator for explosive-engines having a base provided with a valved passage therethrough connected with the exhaust of the engine, a plurality of concentric domes detachably secured to said base and inclosing
 120 outer and inner gas-chambers and an intermediate heating-chamber, said heating-chamber connected with the passage in the base, said inner gas-chamber connected with the engine-inlet and means for delivering the liquid into
 125 the outer of said gas-chambers.

17. A gas-generator for explosive-engines having a base provided with a valved passage therethrough connected with the exhaust of the engine, a plurality of concentric domes de-
 130

tachably secured to said base and inclosing outer and inner gas-chambers and an intermediate heating-chamber, said heating-chamber connected with the passage in the base, said inner gas-chamber connected with the engine-inlet and means for connecting the liquid supply with the outer of said gas-chambers and a rotary distributor in the outer chamber in the path of the liquid-inlet.

10 18. A gas-generator comprising a base portion having a valved passage-way in it and inclosing a gas-chamber having an outlet, concentric domes detachably secured to the base and inclosing outer and inner gas-chambers and an intermediate heating-chamber, said heating-chamber connected with the valved passage in the base and the gas-chambers being one connected with the source of liquid-supply and the other being connected with the valved passage in the base, said outer chamber having a fuel-inlet and a means for distributing liquid to be vaporized over the surface of said outer chamber.

15 19. A gas-generator comprising a base portion having a valved passage therein, and a gas-chamber provided with an outlet, concentric domes attached to the base and inclosing outer and inner gas-chambers and an intermediate heating-chamber, said heating-chamber connected with the passage in the base on opposite sides of the valve therein, and connections between the several gas-chambers, said outer chamber having a liquid-inlet.

20. A gas-generator comprising a base portion having a valved passage therein, and a gas-chamber provided with an outlet, concentric domes attached to the base and inclosing outer and inner gas-chambers and an intermediate heating-chamber, said heating-chamber connected with the passage in the base on opposite sides of the valve therein, connections between the several gas-chambers, said outer chamber having a liquid-inlet and a plurality of staggered substantially A-shaped baffles in the outer chamber arranged in the path of the liquid.

21. A gas-generator comprising a base portion having a valved passage therein, and a gas-chamber provided with an outlet, concentric domes attached to the base and inclosing outer and inner gas-chambers and an intermediate heating-chamber, said heating-chamber connected with the passage in the base on opposite sides of the valve therein, and connections between the several gas-chambers, said outer chamber having a liquid-inlet, and a rotary liquid-distributor in the outer chamber arranged in the path of the liquid admitted through said inlet.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ADOLPH W. JONES.

Witnesses:

W. W. WHITE,
CARLIN G. SMITH.