F. D. J. KAESSMANN.

GAS GENERATOR AND COMPRESSOR.

APPLICATION FILED JAN. 23, 1912.

1,079,011.

Patented Nov. 18, 1913.

3 SHEETS—SHEET 1.

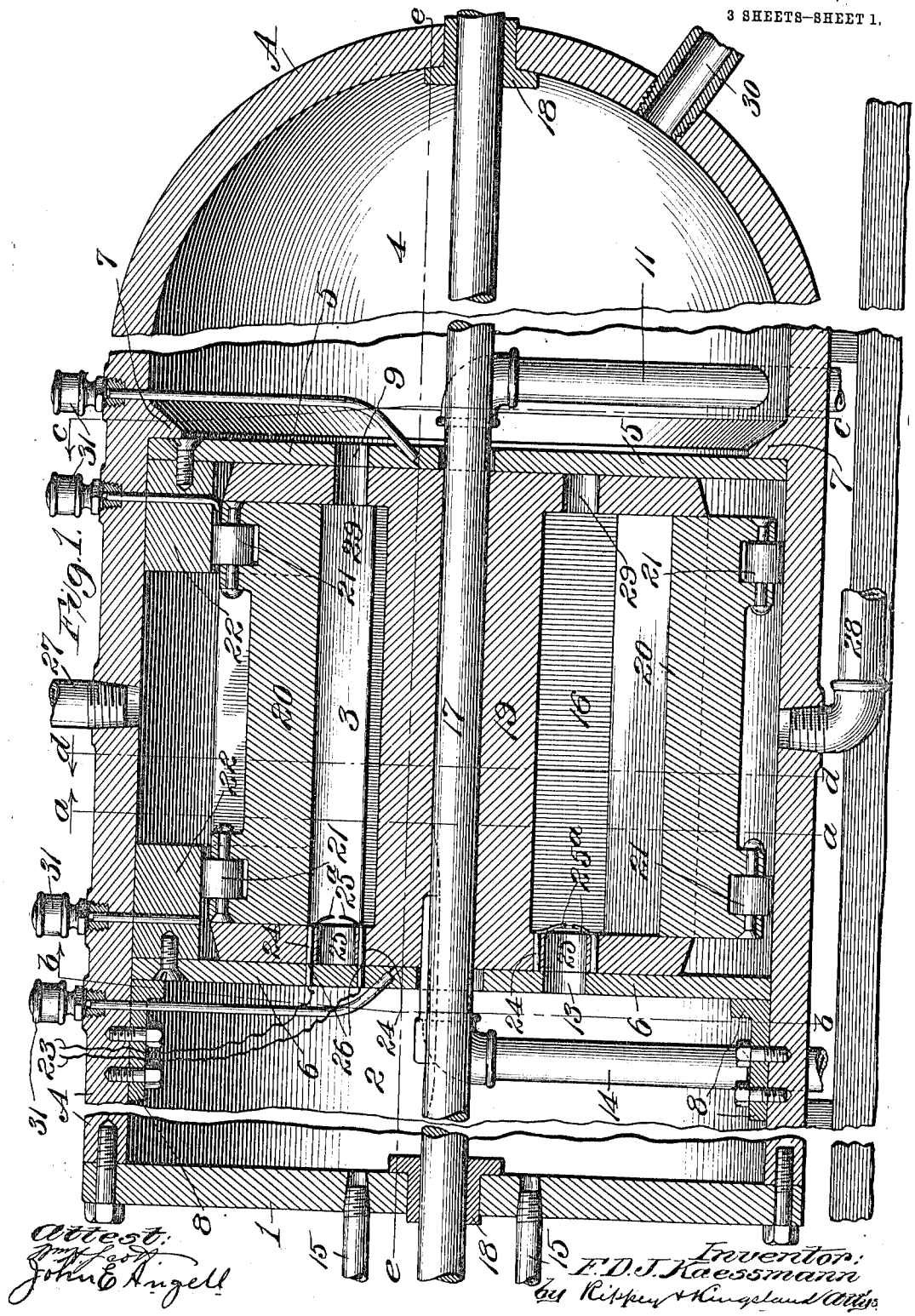


Fig. 1.

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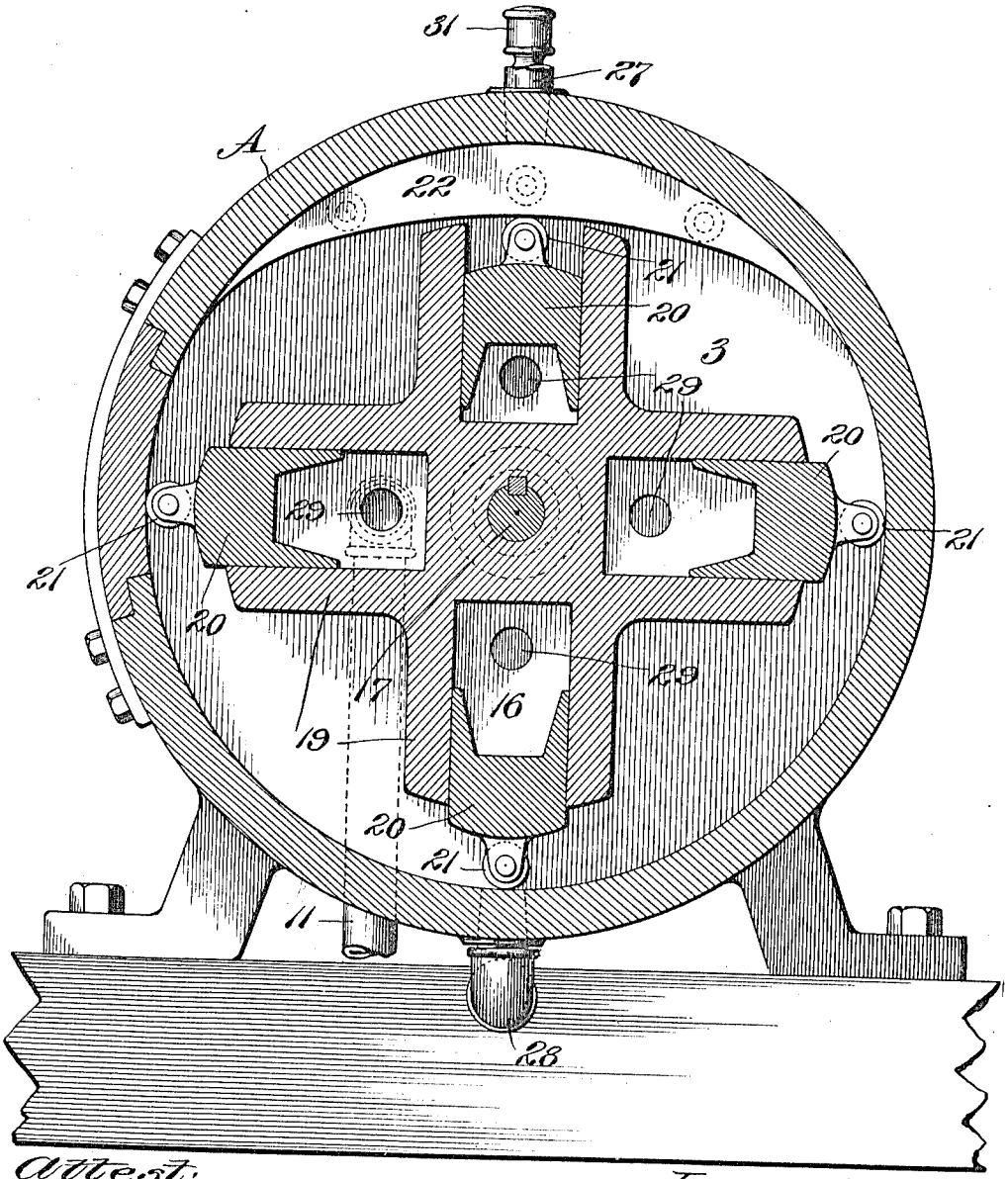
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS—SHEET 3.

Fig. 3.

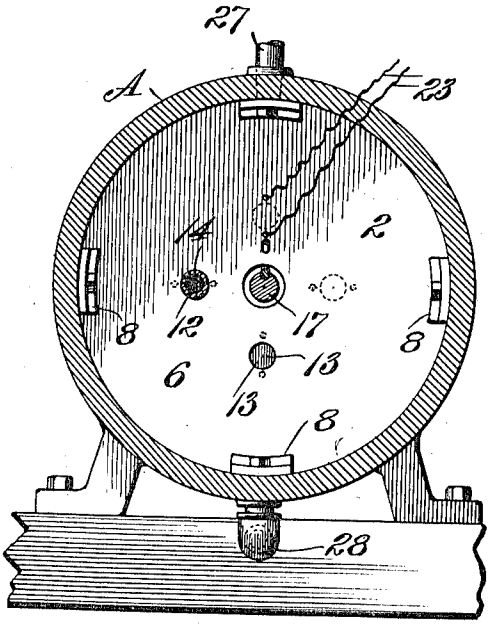


Fig. 4.

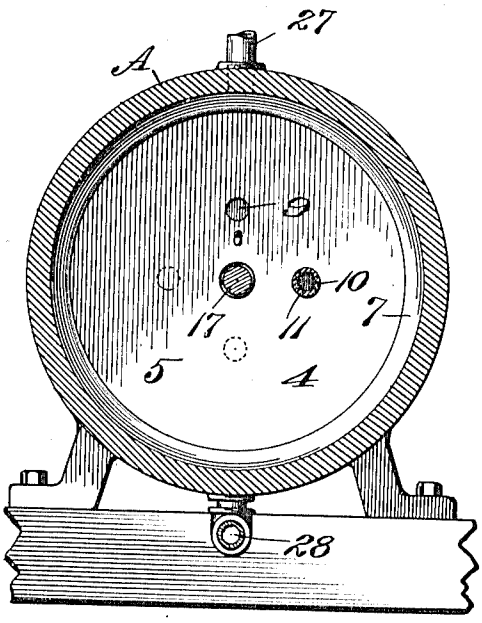


Fig. 5.

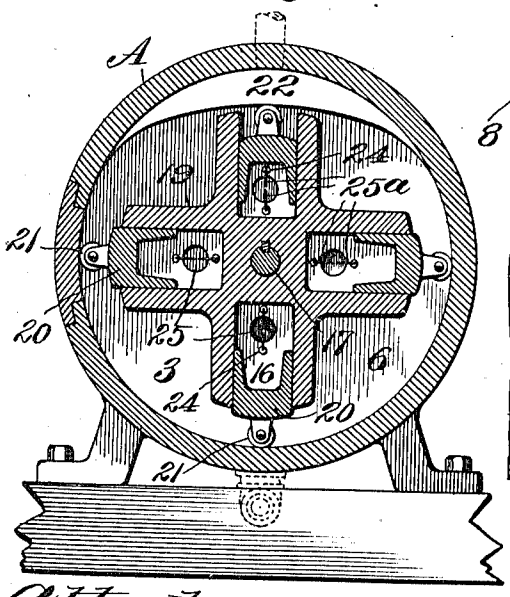
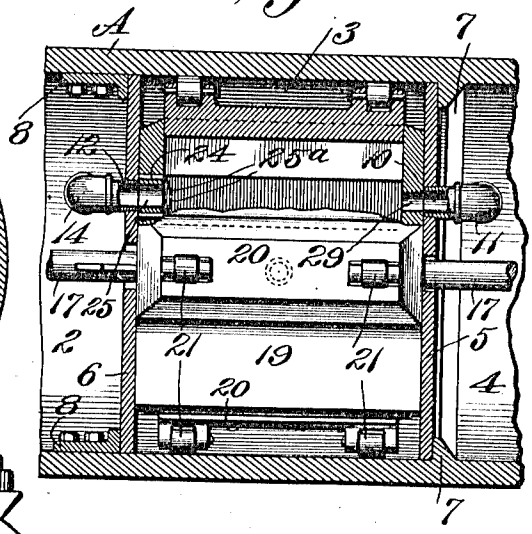


Fig. 6.



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UNITED STATES PATENT OFFICE.

FREDERICK D. J. KAESSMANN, OF COFFEYVILLE, KANSAS.

GAS GENERATOR AND COMPRESSOR.

1,079,011. Specification of Letters Patent. Patented Nov. 18, 1913.

Application filed January 23, 1912. Serial No. 672,989.

To all whom it may concern:

Be it known that I, FREDERICK D. J. KAESSMANN, a citizen of the United States, residing at the city of Coffeyville, Montgomery county, State of Kansas, have invented a new and useful Gas Generator and Compressor, of which the following is a specification.

This invention relates to gas generators and compressors and consists in the novel arrangement and combination of the parts shown, described and claimed.

An object of the present invention is to provide an apparatus of the character mentioned whereby carbureted air may be converted into gas, which is then compressed and delivered under substantially uniform pressure, to the power cylinder of an engine.

Another object is to produce a device, whereby the gas after being generated may be delivered to the power cylinder of an engine, free from the detrimental products of combustion and in the highest state of efficiency for the operation of the engine.

To these and other ends, which will be apparent without specific mention, I have combined and arranged the several coöperating parts hereinafter described in the specification and illustrated in the drawings and, in which—

Figure 1 is a longitudinal broken sectional view of one embodiment of my invention. Fig. 2 is a transverse sectional view on the line *a—a* of Fig. 1. Fig. 3 is a transverse sectional view on the line *b—b* of Fig. 1. Fig. 4 is a transverse sectional view on the line *c—c* of Fig. 1. Fig. 5 is a transverse sectional view on the line *d—d* of Fig. 1, and, Fig. 6 is a sectional plan view on the line *e—e* of Fig. 1.

In the embodiment of my invention illustrated in the drawings, the casing A provided with removable head plate 1 is divided into three compartments or chambers 2, 3 and 4, respectively. The annular plate 5, which is secured to the shoulders 7 on the interior of the casing separates chambers 3 and 4 and the plate 6, held in proper adjustment by the angle plates 8 suitably secured to the interior of the casing, constitutes a partition between chambers 2 and 3. The plate 5 is provided with ports 9 and 10, the former providing a means of communication between compartments 3 and 4 and the latter between compartment 3 and the atmosphere by means of the passage 11. The plate 6 is provided with ports 12 and 13, the former for the admission of clear air through passage 14 to the compartment 3 and the latter for the introduction of carbureted air from the chamber 2 to chamber 3. Carbureted air is supplied under pressure through the passage 15 to the chamber 2 from which it is forced into the compartments 16 in the chamber 3. A longitudinal shaft 17 suitably journaled in bearings 18 carried at each end on the case A has rigidly mounted thereon the casting 19. This casting 19 is divided into a plurality of compartments 16. Each of the compartments 16 is provided with head blocks 20 constituting compression plates, which are slidably mounted therein. Rollers 21 are revolubly mounted on either side of the outer face of each head block and constitute anti friction devices as the shaft and carried parts are revolved within the chamber 3. Elliptical plates 22 are suitably secured to the upper interior surface of the chamber 3 at each end thereof, as clearly shown in Fig. 1. As I have illustrated these plates they are separate from the casing but in some instance it may be preferable to form them integral therewith. It will be apparent that the carbureted air entering through the passage 13 into any one of the compartments 16 will be compressed as the rollers 21 come in contact with the concave inner cam surface of the plates 22. Electrical conduits 23, which may be energized in any convenient manner, pass through the plate 6. Electrical conduits 24 pass through the end wall of the casting 19 adjacent to ports 25, formed in one end of each of the compartments 16. As the conduits 24 contact with the conduits 23 at the contact point 26, an electrical spark passes between the adjacent ends of the conduits 25^a exploding the gas contained in the compartments 16 at the instant the gas has been compressed by the rollers passing under the plates 22.

Cold water is admitted through the pipe 27 and circulates throughout the chamber 3 and through the outlet pipe 28, thus keeping the parts contained within the chamber cool. As the rotation continues the port 25 is brought into registering position with the port 12 and the port 25, formed in the opposite end of each compression compartment, is brought into registering position with the port 9, and fresh air from the passage 14 is forced through the compart-

ment 16 thus cooling and scavenging the compartment 16 of any exploded gas or impurities, preparatory to its recharging, when the port 25 again registers with the port 13. The products of combustion contained in the compartment 16 after the explosion has occurred pass out through the ports 29 and 8 and are then forced out through the passage 11. Suitable lubricating devices 31 may be provided for supplying lubricant to the operating parts of the mechanism, as will be readily understood.

From the foregoing the operation of the device will be apparent. The carbureted air is first introduced into the chamber 2 through the passages 15. The pressure in the chamber 2 should obviously be maintained above atmospheric pressure so that when the ports 13 and 25 in any one of the compartments 16 register the carbureted air from the chamber 2 will be forced into the compartment and as the revolution of the element 19 continues the charged compartment will be brought to a position where the conduits 23 and 25 contact, which takes place at the instant the air has been compressed to the greatest degree by the head block being pressed downwardly by the cam surface of the plates 22. At the time the explosion occurs the adjustment is such that the ports 9 and 29 register and the exploded gas is forced into compartment 4. It is apparent that the gas thus delivered to the chamber 4 will be under high pressure, which is preserved substantially uniform by the successive discharge of gas from the revolving compartments. From the chamber 4 the compressed gas is delivered through the passage 30 to the power cylinder of an engine. The compartments are then cleared and recharged as above explained. The shaft 17 may be rotated by suitable transmission mechanism by the engine to which the gas is supplied.

I am aware that there may be certain changes in design and arrangement of the several parts without departure from the spirit and scope of my invention. I do not restrict myself, therefore, to exact detail, but

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

1. A gas generator and compressor, comprising a casing, a series of plates separating said casing into a charging chamber, a cylinder chamber, and a storage chamber, cam plates within said cylinder chamber, a shaft journaled in said case and extending longitudinally through the center thereof, a cylinder carrier fast on said shaft located within said cylinder chamber, a series of cylinders formed in said carrier, a compression plate slidably mounted in each of said cylinders, rollers carried on the outer face of each of said plates arranged to contact with the inner surface of the cylinder chamber and with said cam plates, a port at each end of said cylinders, ports in said partition, arranged to register with said ports in said cylinders so that each cylinder will be brought into communication with the charging chamber and brought into communication with said storage chamber at each complete revolution of said shaft, and electrical means adapted to explode the carbureted air introduced in said cylinders at the instant the compression plate is driven downward by said cam plates, substantially as specified.

2. A gas generator and compressor, comprising a casing, a series of plates separating said casing into a charging chamber a cylinder chamber, and a storage chamber, cam plates within said cylinder chamber, a shaft journaled in said case and extending longitudinally through the center thereof, a cylinder carrier fast on said shaft located within said cylinder chamber, a series of cylinders formed in said carrier, a compression plate slidably mounten in each of said cylinders, rollers carried on the outer face of each of said plates arranged to contact with the inner surface of the cylinder chamber and with said cam plates, a port at each end of said cylinders, ports in said partition, arranged to register with said ports in said cylinders so that each cylinder will be brought into communication with the charging chamber and brought into communication with said storage chamber at each complete revolution of said shaft, means for circulating water through said cylinder chamber for cooling said chamber, and electrical means adapted to explode the carbureted air introduced in said cylinder at the instant the compression plate is driven downward by said cam plates, substantially as specified.

3. An apparatus of the character mentioned, comprising in combination, a casing divided into three chambers, a gas supply passage entering one of said chambers, a series of cylinders located within the second of said chambers and arranged to revolve therein, a cam plate secured to the inner part of said second-named chamber, compression plates slidably mounted in each of said cylinders, rollers carried by said plates and traveling on the inner surface of said second-named chamber, a valve for establishing communication between said first-named chamber and said cylinders revolving in said second-named chamber and a valve for establishing communication between said cylinders and said third-named chamber for the purposes set forth, substantially as specified.

4. An apparatus of the character mentioned, comprising a rotary casing provided with four rectangular cylinders, one side of each cylinder being slidable radially,

means for reciprocating said slidable sides, a fuel inlet passage for said cylinders, service passages for said cylinders, fresh air inlet passages for said cylinders and exhaust passages for said cylinders, valves for controlling each of said passages and electrical means for exploding the fuel introduced into said cylinders, substantially as specified.

5. An apparatus of the character mentioned, comprising a rotary casing provided with four rectangular cylinders, one side of each cylinder being slidable radially, means for reciprocating said slidable sides, a fuel inlet passage for said cylinders, service passages for said cylinders, fresh air inlet passages for said cylinders and exhaust passages for said cylinders, valves for controlling each of said passages, means for cooling said cylinder casing, and electrical means for exploding the fuel introduced into said cylinder, substantially as specified.

6. In an apparatus of the character mentioned, the combination of three adjacent chambers—the intermediate one of said chambers being provided with an elliptical inner surface, a cylinder case having four rectangular cylinders formed therein journaled to rotate within the intermediate one of said chambers, compression plates in each of said cylinders provided with rollers adapted to travel on the inner surface of said last-named chamber, a fuel supply pipe entering one of said chambers, passages leading from said last-named chamber to said cylinders, passages leading from said cylinders to the other of said chambers, and valves for controlling said passages effectively to permit the fuel to pass from one of said chambers to said cylinders and to permit the passage of the gas from said cylinders to the other of said chambers after the same has been exploded, in rotation, substantially as specified.

7. The combination of a casing provided with a fuel inlet passage at one end thereof, a service passage at the opposite end thereof, and an elliptical roller surface, of two stationary valve disks, a cylinder case provided with a series of four rectangular cylinders journaled to revolve in said casing between said valve disks, compression plates constituting the outer side of said cylinders, rollers carried by said plates adapted to travel over the elliptical surface of the case, and means for revolving said cylinder casing for the purposes set forth, substantially as specified.

8. The combination of a casing provided with a fuel inlet passage at one end thereof, a service passage at the opposite end thereof, and an elliptical roller surface, of two stationary valve disks, a cylinder case provided with a series of four rectangular cylinders journaled to revolve in said casing between said valve disks, compression plates constituting the outer side of said cylinders, rollers carried by said plates adapted to travel over the elliptical surface of the case, means for cooling said cylinder case, and means for revolving said cylinder casing for the purposes set forth, substantially as specified.

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

FREDERICK D. J. KAESSMANN.

Witnesses:
P. H. ALLEN,
D. MOBERLY.