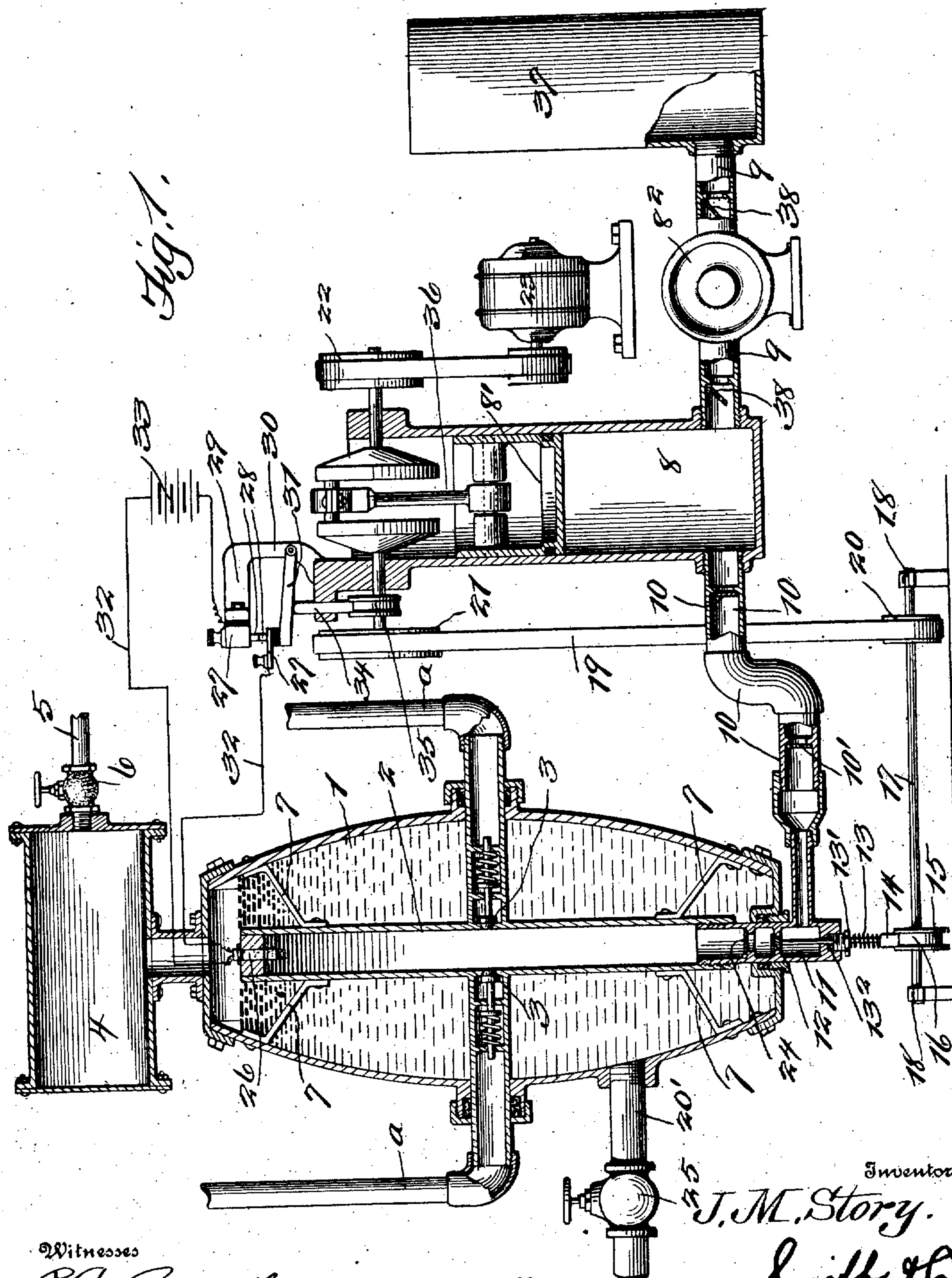


No. 850,191.

PATENTED APR. 16, 1907.

J. M. STORY.
STEAM GENERATOR.
APPLICATION FILED MAY 31, 1906.

3 SHEETS—SHEET 1.



Witnesses

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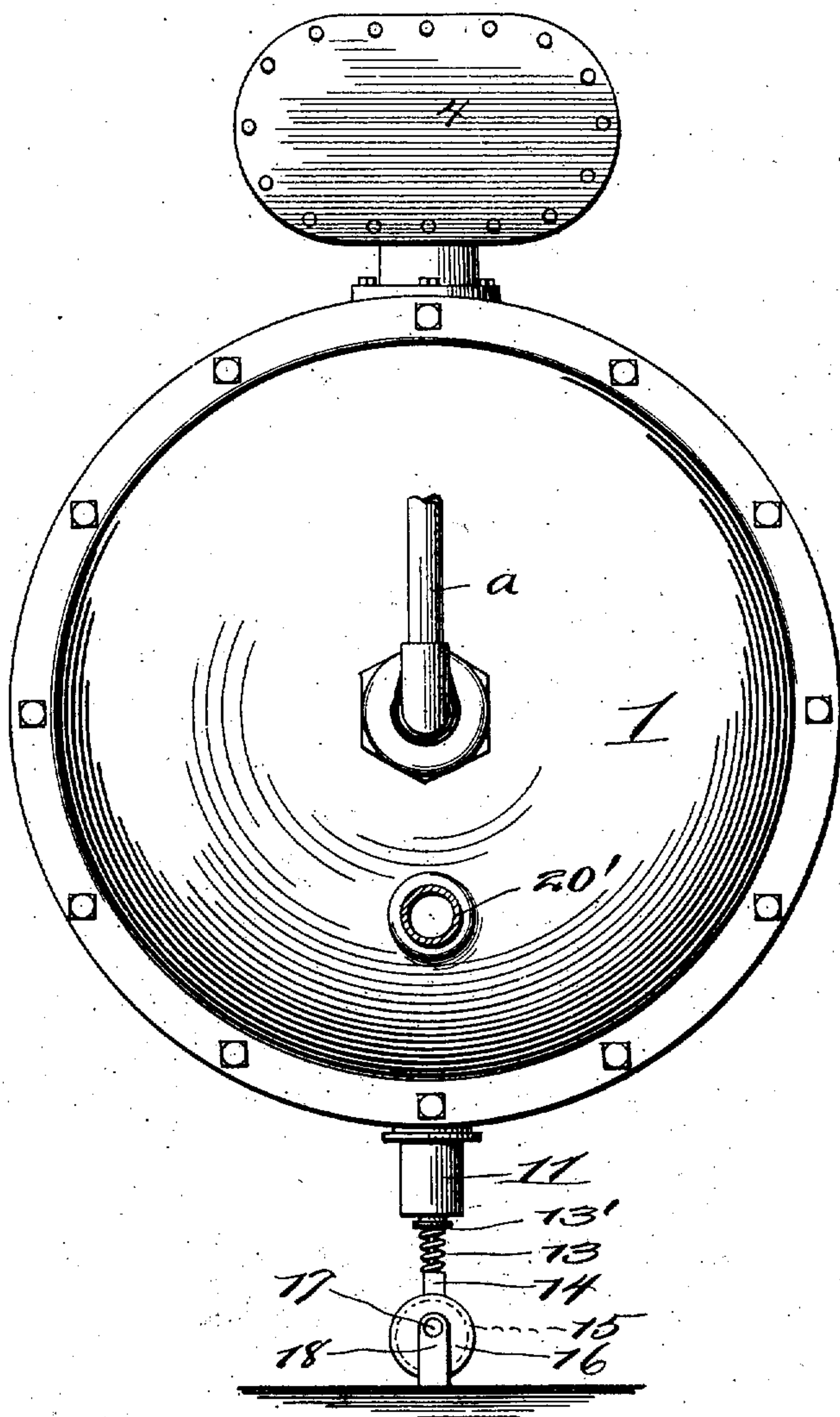
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses

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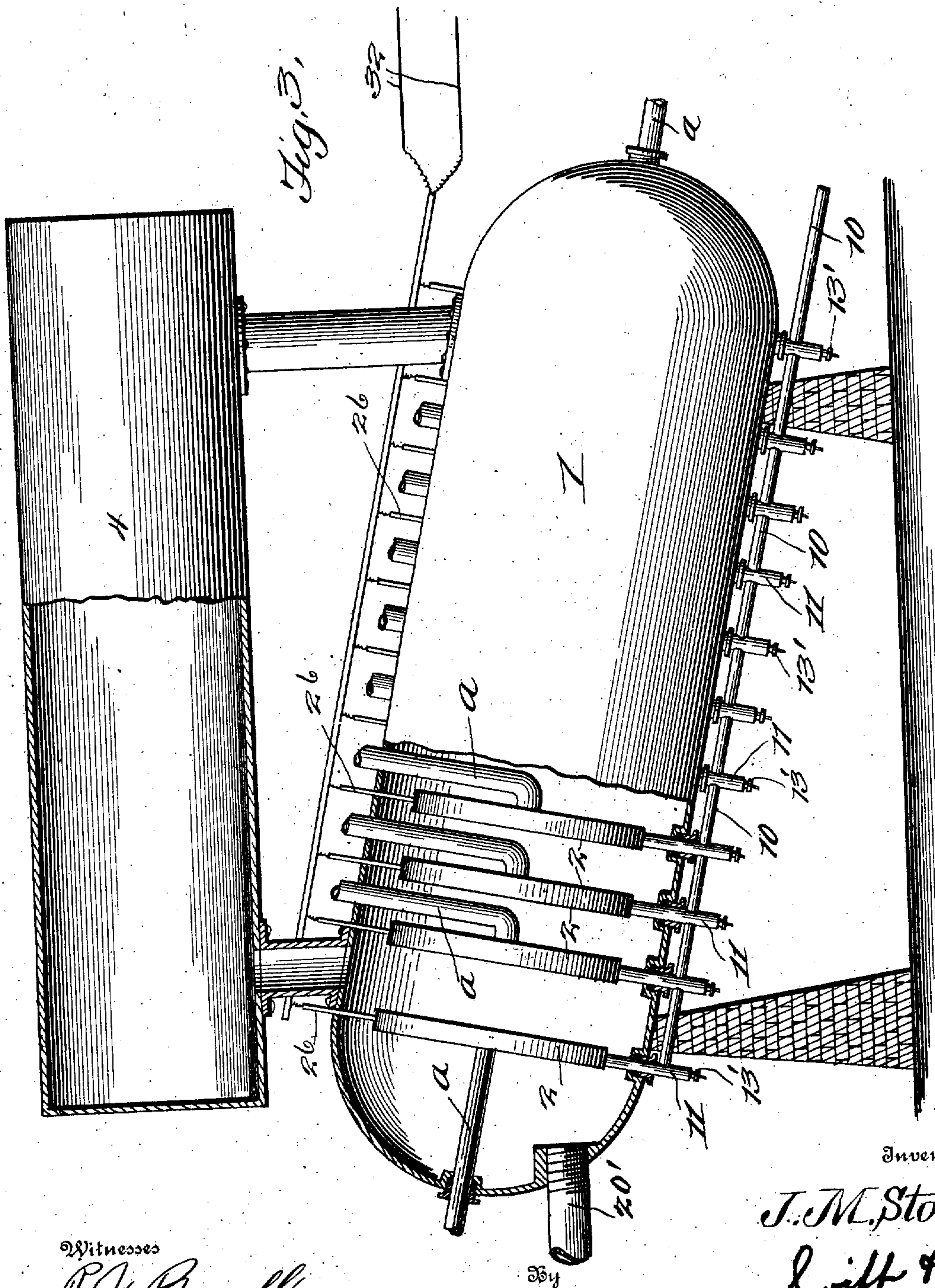
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

JOSEPH M. STORY, OF OWOSSO, MICHIGAN.

STEAM-GENERATOR.

No. 850,191.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed May 31, 1906. Serial No. 319,538.

To all whom it may concern:

Be it known that I, JOSEPH M. STORY, a citizen of the United States, residing at Owosso, in the county of Shiawassee and State of Michigan, have invented a new and useful Steam-Generator; 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 relates to certain new and useful improvements in steam-generators, the invention having for its object to provide an apparatus of this character having a boiler disposed upon a vertical plane, through which a vertically-disposed combustion-chamber or tube extends, by which the water within the boiler is heated to a capacity sufficient to generate steam, which passes upward to the dome. From thence it is conveniently utilized for the purpose desired—that is, when the tube-igniter causes a combustion—through the intermittent vertical movement of the circuit-breaking bolt, which is operated by means of the cam carried by the driving-shaft of the apparatus.

The usual gasoline-tank is provided, to one side of which the carbureter is positioned for the purpose of generating gases which are conveyed to the gas-pump through the co-operation of the motor which is belted thereto, from which gas-pump the gases are forced into the combustion-chamber through an intermittent entrance which is operated by the driving-shaft coöperating with a secondary shaft.

This invention comprises further objects and combinations of elements, which will be hereinafter more fully described, shown in the accompanying drawings, and the novel features thereof will be pointed out by the appended claim.

To obtain a full and correct understanding of the details of construction, combinations of features, elements, and advantages, reference is to be had to the hereinafter set forth description and the accompanying drawings in connection therewith, wherein—

Figure 1 is a vertical sectional view through the boiler and combustion-chamber, showing also in conjunction therewith in a diagrammatic way the gasoline-tank, carbureter, and gas-pump. Fig. 2 is an end view showing more fully the general contour of the boiler and steam-dome. Fig. 3 is a view showing an inclined boiler of a size consider-

ably larger than shown in Fig. 1, so as to accommodate a plurality of combustion-chambers, each having the usual igniter.

Making renewed reference to the accompanying drawings, wherein similar reference-characters indicate corresponding parts in the several illustrations, by figures, 1 designates the boiler, which is elliptical shape in cross-section and circular in end view, in which is positioned the combustion-chamber 2, having the outlet-valves 3 for the escape-ment of the gases of combustion. Positioned above the boiler is the steam-dome 4, to which the steam rises, from which it is conveyed when desired for use by means of the pipe 5, which is provided with a regulating-valve 6, as clearly shown.

The outlet-valves 3 are seated upon the sides of the combustion-chamber or explosion-chamber within pipes *a*, which extend laterally from the explosion-chamber through the walls of the boiler, which are provided with glands or packing-boxes 3^b, in which suitable packing is placed around the pipes *a*, so as to form tight joints. The pipes *a* are provided with elbows and with upward extensions, through which the gases of combustion may be conveyed to the point of discharge. Within the pipes *a* are cross-pieces or bridges 3^c, affording bearings for the stems 3^d, carrying the valves 3, which latter serve as closures for the ports 4^b in the side walls of the explosion-chamber. The valves 3 are normally kept closed by the action of suitably-arranged springs 4^e. When the tension of said springs is overcome by the pressure of the gases in the explosion-chamber, the valves 3 will be displaced by the pressure of the gases, which latter will thus be permitted to escape until equilibrium of pressure is reestablished.

The combustion-chamber or explosion-chamber is suitably raised and supported within the boiler, as clearly shown in Fig. 1 of the drawings, by means of bars or brackets 7.

The gases are drawn into the gas-pump 8 on the upper stroke of the piston 8'—that is, after they have been generated by the carbureter 8²—through the pipes 9, and upon the downward stroke of the piston the gases are forced into the combustion-chamber 2 through the piping 10, which piping is provided with suitable check-valves 10', which piping 10 is connected to the gas-entrance pipe 11 and also affords communication

therewith. This gas-entrance pipe 11 extends at right angles to the piping 10 and is provided with a gas-admitting valve 12, by which the gases are intermittently conveyed to the combustion-chamber, as will be understood. This gas-admitting valve is re-seated by means of the spring 13, which is mounted upon the stem of the valve between the nut 13' of the packing-gland 13² of the gas-entrance pipe and an enlargement 14 upon the end of said stem, which enlargement travels within a groove 15 of the cam 16, which is mounted upon the secondary shaft 17, which is journaled in suitable bearings 18, as clearly shown. This secondary shaft is operated through the medium of the belting 19, which travels over the pulley 20 of the said secondary shaft and the pulley 21, carried by the shaft of the gas-pump, as clearly shown in Fig. 1. The driving-shaft of the gas-pump is suitably operated by means of the pulley 22, journaled to said shaft, which is belted to the motor 23, such as shown, but which may be of any suitable type. Positioned above the gas-admitting valve 12 within the gas-entrance pipe is a check-valve 24 to prevent the retrogression of the gases. Water is supplied to the boiler through the pipe 20', which is provided with a regulating-valve 25, as shown.

The combustion-chamber is provided with a tube-igniter 26, which is electrically connected with the plates 27, having the contact-points 28, one of which plates is suitably secured to a horizontal portion 29 of a vertically-extending arm 30, projecting from the upper part of the gas-pump, and the other plate 27 is suitably secured to an oscillating lever 31, which is pivoted to the said arm 30. These plates 27 are suitably insulated from the metal to which they are secured and are electrically connected with the tube-igniter by means of the wires 32, having a suitable battery 33 in circuit therewith. This oscillating lever is operated by means of the vertically-movable bolt 34 and the grooved cam 35 in conjunction therewith, which is journaled upon the shaft of the gas-pump, as clearly illustrated in Fig. 1 of the drawings.

By means of the construction just described an intermittent movement is imparted to the oscillating lever 31, so as to form electrical connections at regular intervals between the contact-points 28, thus breaking the circuit and causing the tube-igniter to be operated, after which a combustion of the

gases is rendered by which the combustion-chamber is considerably heated, thus causing the water within the boiler to be gradually heated, from which the steam arises to the dome 4, as will be understood.

The piston of the gas-pump is connected with the driving-shaft thereof by means of the pitman 36, as clearly shown. The apparatus is provided with a gasoline-tank 37, having suitable connection and communication with the carbureter 8² through the pipe 9. The pipes 9 are provided with check-valves 38, which open upon the upward stroke of the piston of the gas-pump, so as to draw the gases therein, and upon the downward stroke of the piston the said check-valves are closed and the check-valves 10' of the piping 10 are open, thus allowing the gases to enter the combustion-chamber when the gas-admitting valve is open.

In Fig. 4 is shown a boiler of sufficient size to accommodate a plurality of combustion-chambers which are supplied with gases by means of the apparatus, as shown in Fig. 1, but not being necessary to be shown in conjunction with the construction shown in the said Fig. 4.

From the foregoing the essential features, elements, and the operation of the device, together with the simplicity thereof, will be clearly observed and when manufactured in accordance with the invention an inexpensive market will be easily obtained therefor.

Having thus described the invention, what is claimed as new and useful by the protection of Letters Patent is—

In a steam-generator of the class described a boiler, an explosion-chamber supported within the boiler, means for intermittently admitting explosive-gases into the explosion-chamber, intermittently-operating means for igniting said gases, escape-pipes connected with the explosion-chamber and extending through packing-glands in the walls of the boiler and spring-actuated escape-valves within said pipes normally engaging escape-ports in the side walls of the combustion-chamber.

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

JOSEPH M. STORY.

Witnesses:

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OTILLIE M. TICK.