E. SCOTT.

POWER GENERATOR.

APPLICATION FILED JULY 11, 1916.

1,224,673. Patented May 1, 1917.

Fig. 1

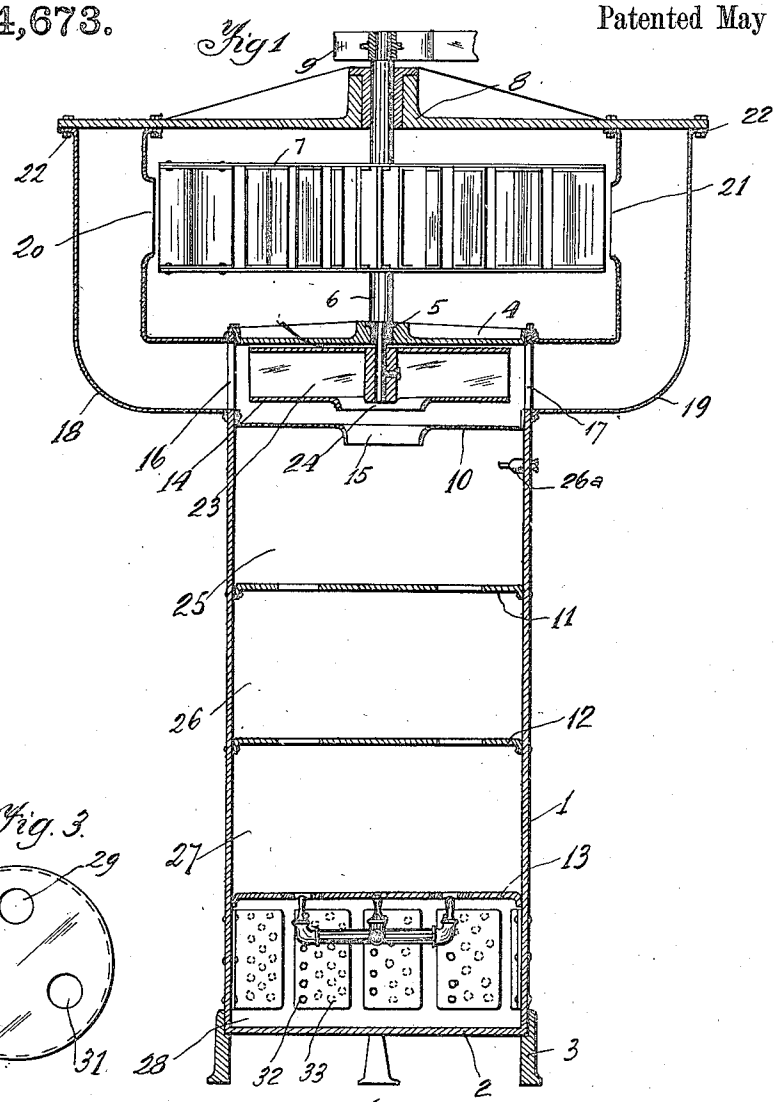
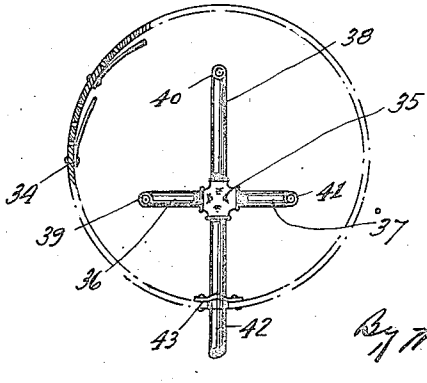


Fig. 3.

Fig. 2



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POWER-GENERATOR.

1,224,673. Specification of Letters Patent. Patented May 1, 1917.

Application filed July 11, 1916. Serial No. 108,555.

To all whom it may concern:

Be it known that I, EDWARD SCOTT, a citizen of the United States, residing at Pittsburgh, county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Power-Generators, of which the following is a specification.

This invention relates to power generators and has for its object to provide a generator in a manner as hereinafter set forth, whereby the expanding gases from an explosion of a combustible mixture will be so directed as to be utilized for driving a turbine.

Further objects of the invention are to provide a power generator which is simple in its construction and arrangement, strong, durable, efficient in its use, readily set up either vertical or horizontal, and inexpensive to manufacture.

With the foregoing and other objects in view the invention consists of the novel construction, combination and arrangement of parts, as hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In the drawings wherein like reference characters denote corresponding parts throughout the several views:—

Figure 1 is a vertical sectional view of a generator in accordance with this invention showing the adaptation thereof in connection with a rotor or turbine.

Fig. 2 is a sectional plan.

Fig. 3 is a detail illustrating a partition.

Referring to the drawings in detail 1 denotes a cylindrical casing, which is closed at its bottom as at 2, and mounted upon supports 3. The casing 1 has a head 4 for closing the upper end thereof and extending through said head 4 is a shaft 5 which forms a continuation of a turbine for rotor shaft 6. The turbine or rotor is indicated at 7 and has the shaft 6 thereof extending through a cross head 8. The shaft 6 is operatively connected as at 9, with the machine which is desired to be driven.

The cylinder 1 is provided with a series of partitions 10, 11, 12 and 13. The partition 10, in connection with the head 4, provides a fan chamber 14, having an inlet 15 and a pair of opposed outlets 16, 17. Communicating with the outlets 16 is an L-shaped conducting pipe 18 and communicating with the outlet 17 is an L-shaped conducting pipe 19. The vertical portion of the pipe 18, has the inner side thereof, near its top, formed with a nozzle 20 which injects the expanding gases into the rotor 7. The vertical portion of the pipe 19, on its inner side, near its upper end, has a nozzle 21 which injects the expanding gases into the rotor 7. The upper ends of the vertical portions of the pipes 18, 19 are connected as at 22, to the cross head 8 and the latter provides a closure for the upper ends of the said pipes.

The fan shaft 5 extends into the fan chamber 14 and carries a fan 23 having an inlet 25. The fan 23 constitutes what may be termed an expeller and is employed for expelling the exploded gases, created in a manner as referred to, from the cylinder 1 and forces said exploded gases up and out through the pipes 18, 19, so that said gases will not remain in the explosive chamber to be referred to.

The partition 11, in connection with the partition 10, forms an explosive chamber 25 into which, near the top thereof, extends an igniter 26.

The partitions 11 and 12 form a gas and air mixing chamber 26^a, the partitions 12 and 13 form a gas and air mixing chamber 27, and the bottom 2 in connection with the compartment 13 provides an air inlet compartment 28.

Each of the compartments 11, 12, and 13 is formed with a series of openings as indicated three in number, and designated 29, 30, and 31.

The portion of the casing or cylinder 1 which forms the side of the compartment 28, is formed with a series of rows of openings 32. Preferably six rows of openings 32 are employed, but this number can be increased or diminished and the said openings 32 are termed air inlets. Secured to the inner face of the casing 1, within the compartment 28, are flap check-valves 33, which are utilized to close the openings 32 to shut off the force of the explosion from escaping through the air inlets. The length of each flap check-valve is such as to ex-

tend over six rows of openings and the width so as to extend over three openings of each row. One vertical edge of each flap valve is connected to the cylinder or casing 1, by suitable securing devices, as at 34.

Arranged within the compartment 28, in close proximity to the partition 13, is a four-way coupling 35, having gas supply pipes 36, 37 and 38 projecting therefrom. The pipe 36 has a nozzle or outlet 39 for discharging gas through the opening 30, the pipe 38 has a nozzle or outlet 40 for discharging gas through the opening 29, and the pipe 37 has a nozzle or outlet 41 for discharging gas through the opening 41. The openings 29, 30 and 31 referred to are those openings in the partition 13. The gas discharged from the pipes 36, 37, and 38, through the openings 29, 30 and 31 enters the chamber 27. Extending into the compartment 28 and connected to the coupling 35, is a gas feed pipe 42, which is secured as at 43, to the casing of the cylinder 1. The pipes 36, 37, 37 and 42 may be suspended from the partition 13 in any suitable manner.

When the fan or expeller 23 is operated, the air is forced from the cylinder 1, and permits of atmospheric pressure forcing the air into the compartment 28 through the openings 32 simultaneously with the supply of air through the openings 32, fuel gas will be supplied through the openings 29, 30 and 31 in the partition 13. As the gas and air pass through the openings 29, 30 and 31, the outer portion thereof is turned over by the walls of the openings, while the central portion freely moves over the openings and in connection with the retarding of the gas and air by the partition, the gas and air mix, and such manner of mixing is also carried on as the gas and air pass from the compartment 27, through the openings in the partiton 12, thence through the compartment 26 and through the openings in the partition 11 and then enter the explosive chamber 25.

It will be assumed that the explosive mixture has entered the chamber 25 where it is ignited by the igniter 26 and the exploded gases are forced into the pipes 18, 19 into the rotor causing the operation of the latter. Back pressure from the chamber 25 passes down through chambers 26a, and 27 and into the compartment 28 and shifts the valves 33 so as to close the openings 32 and will also force the gas back into the feed pipe and interrupt the supply thereof. After the pressure has been relieved in the casing or cylinder 1, due to the exhaust of the expanded gases, gas and air will be supplied to the compartments 26 and 27 so as to provide a combustible chamber and from the compartment 26 will enter the chamber 25 where it will be exploded.

What I claim is:—

1. A power generator comprising a casing having apertured partitions to provide an air inlet compartment, a plurality of gas and air mixing compartments, and an explosive compartment, said air and gas mixing compartments interposed between the explosive compartment and air inlet compartment, means arranged within the air inlet compartment for supplying gas into the lower of the gas and air mixing compartments simultaneously with the supply of air to said compartments, an igniter within said explosive compartment, and means for conducting off the expanding gases of an explosive mixture from the explosive chamber.

2. A power generator comprising a casing having apertured partitions to provide an air inlet compartment, a plurality of gas and air mixing compartments, and an explosive compartment, said air and gas mixing compartments interposed between the explosive compartment and air inlet compartment, means arranged within the air inlet compartment for supplying gas into the lower of the gas and air mixing compartments, simultaneously with the supply of air to said compartments, an igniter within said explosive compartment, and means for conducting off the expanding gases of an explosive mixture from the explosive chamber, and means within said inlet compartment and operated by back pressure of the exploded mixture for closing said air inlet compartment.

3. A power generator comprising a casing having apertured partitions to provide an air inlet compartment, a plurality of gas and air mixing compartments, and an explosive compartment, said air and gas mixing compartments interposed between the explosive compartment and air inlet compartment, means arranged within the air inlet compartment for supplying gas into the lower of the gas and air mixing compartments simultaneously with the supply of air to said compartments, an igniter within said explosive compartment, said casing further including a fan or expeller chamber communicating with said explosive chamber, means leading from said fan or expeller chamber for conducting off the expanded gases of an explosive chamber from the explosive chamber, and an expeller operating in said fan or expeller chamber.

4. A power generator comprising a casing having apertured partitions to provide an air inlet compartment, a plurality of gas and air mixing compartments, and an explosive compartment, said air and gas mixing compartments interposed between the explosive compartment and air inlet compartment, means arranged within the air inlet compartment for supplying gas into the

lower of the gas and air mixing compartments simultaneously with the supply of air to said compartments, an igniter within said explosive compartment, said casing further including a fan or expeller chamber communicating with said explosive chamber, means leading from said fan or explosive chamber for conducting off the expanded gases of an explosive mixture from the explosive chamber, and an expeller operating in said fan or expeller chamber, and means within said air inlet compartment and operated by back pressure of exploded mixture for closing said inlet compartment.

5. A power generator comprising a casing having means to provide a fan chamber, an explosive chamber, gas and air mixing chamber, and an air inlet compartment, said chambers communicating with each other and said gas and air mixing chamber communicating with said air inlet compartment, means arranged within the air inlet compartment for supplying gas into the gas and air mixing chamber simultaneously with the supply of air from said air inlet chamber, into said gas and air mixing chamber, an igniter within said explosive chamber, means communicating with said fan chamber for conducting off the exploded gases of an explosive mixture from an explosive chamber, and an expeller arranged within said fan chamber.

6. A power generator comprising a casing having means to provide a fan chamber, an explosive chamber, gas and air mixing chamber, and an air inlet compartment, said chambers communicating with each other and said gas and air mixing chamber communicating with said air inlet compartment, means arranged within the air inlet compartment for supplying gas into the gas and air mixing chamber simultaneously with the supply of air from said air inlet chamber, into said gas and air mixing chamber, an igniter within said explosive chamber, means communicating with said fan chamber for conducting off the exploded gases of an explosive mixture from an explosive chamber, and an expeller arranged within said fan chamber, and means within said air inlet compartment and operated by back pressure of the exploded mixture for closing the said inlet compartment.

In testimony whereof I affix my signature in the presence of two witnesses.

EDWARD SCOTT.

Witnesses:
LUELLA H. SIMON,
B. E. JENKINS.