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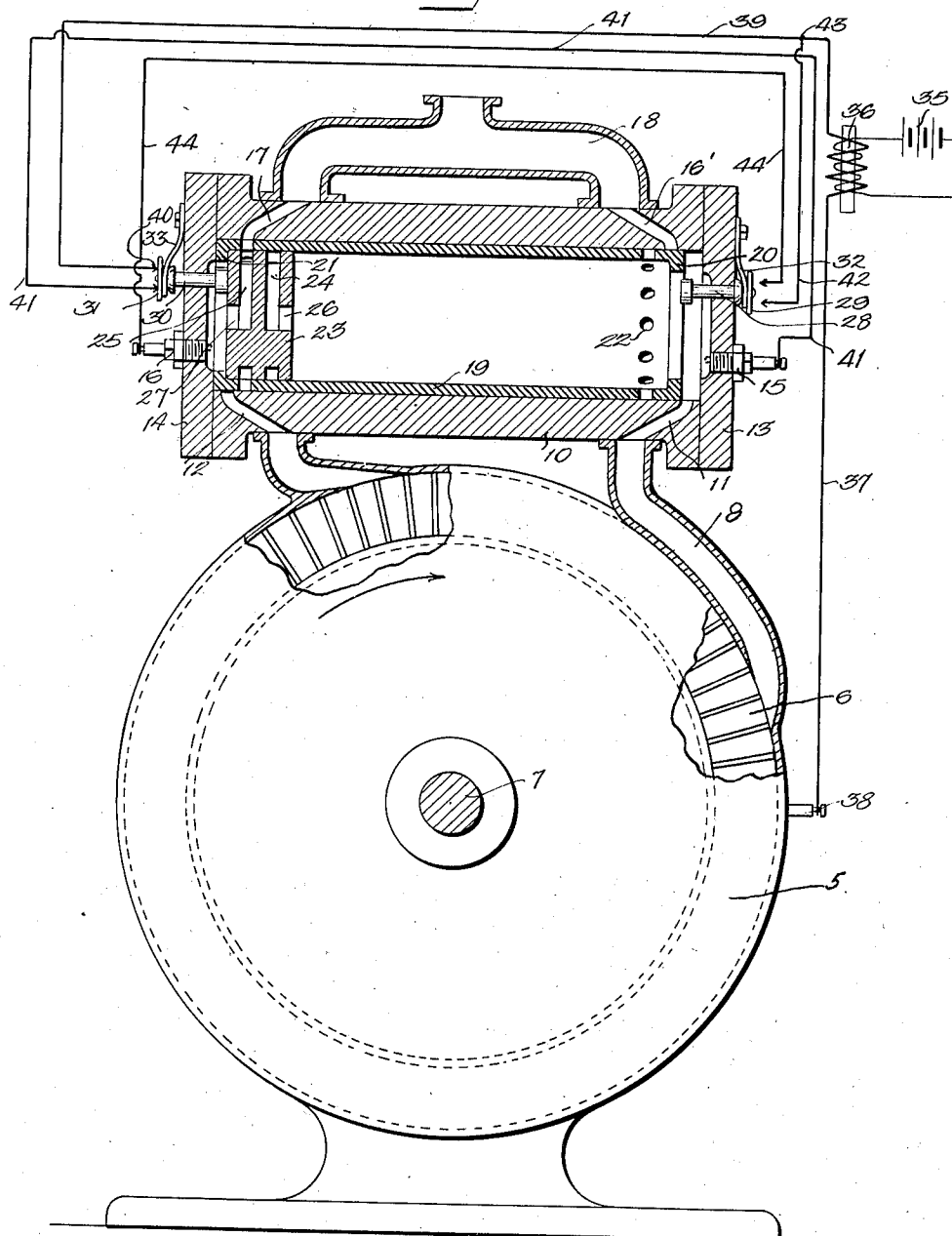
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EXPLOSIVE CHAMBER FOR GAS ENGINES

Filed Oct. 1, 1923

2 Sheets-Sheet 1

Fig. I.



WITNESSES

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Fig. 2.

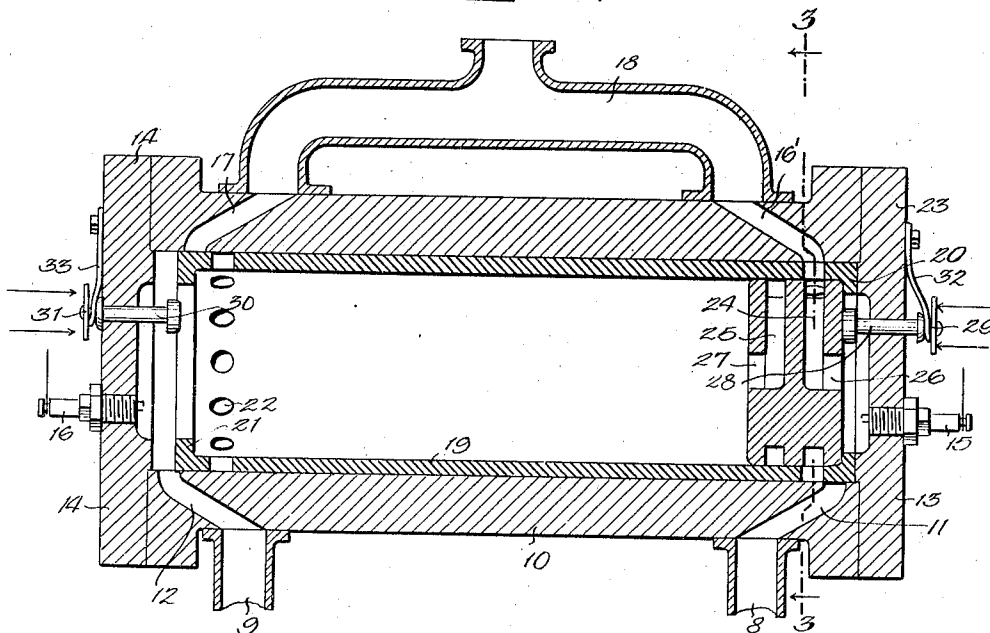
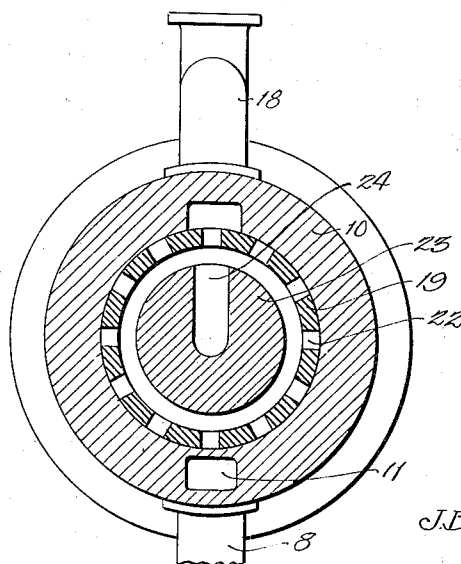


Fig. 3.



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EXPLOSIVE CHAMBER FOR GAS ENGINES.

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The present invention relates to new and useful improvements in motors, and it pertains more particularly to turbines of the impact type.

5 It is one of the primary objects of the present invention to provide a new and improved form of explosive chamber adapted to generate power for use in connection with impact turbines.

10 It is a further object of the invention to construct a chamber of this type in which a gaseous fuel is fired under pressure and exhausted from the chamber.

15 It is a further object of the invention to provide an explosive chamber of the type above described, which will receive a gaseous fuel under pressure, ignite the same, and discharge the products of combustion in the presence of a rotor of the impact type.

20 It is a further object of the invention to provide a chamber which will carry out the aforementioned operations automatically.

25 With the above and other objects in view, reference is had to the accompanying drawings, in which—

30 Figure 1 is a view in elevation, partly in section, showing an explosive chamber constructed in accordance with the present invention and one form of attachment to an impact turbine;

Fig. 2 is a longitudinal sectional view of the explosive chamber with its parts in a position opposite to the position in which they are shown in Fig. 1;

35 Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2.

Referring more particularly to the drawings, the reference numeral 5 designates a turbine of the impact type, such turbine having a rotor 6 carried by a shaft 7, all of which are of conventional form. Leading into the housing of the turbine 5 are two intake passages 8 and 9.

45 The reference numeral 10 designates the explosive chamber, which is preferably circular in form and has in its side walls two exhaust passages 11 and 12 which coincide with the inlet passages 8 and 9 heretofore referred to. The explosive chamber 10 is preferably formed with removable heads 13 and 14, and mounted in the heads 13 and 14, are igniting devices 15 and 16, respectively.

55 At points removed from the exhaust passages 11 and 12 and preferably diametrically opposed with respect thereto, the chamber is

provided with intake passages 16' and 17, and having communication with such intake passages 16' and 17, there is an intake manifold 18, connected to a suitable source of 60 fuel supply.

Mounted within the chamber 10, there is a sleeve 19, having flanged ends 20 and 21. The side walls of the sleeve are provided near each end with a circular series of open- 65 ings 22, the purpose of which will be hereinafter described. Mounted within the sleeve 19, there is a traveling piston 23, and such piston is provided with ports 24 and 25 therein, the port 24 discharging through an 70 opening 26, and the port 25 discharging through an opening 27.

Mounted in the head 13 of the chamber there is a sliding pin 28, carrying a switch member 29, and in the head 14 of the cham- 75 ber there is a sliding pin 30, carrying a switch member 31. The sliding pins are controlled by springs 32 and 33, respectively.

The reference numeral 35 designates a suitable source of power, and 36 designates 80 an induction coil. Leading from the induction coil 36, there is a conductor 37, which is grounded as at 38. The reference numeral 39 designates a conductor leading from the induction coil to the terminal 40 85 of the switch member 31 heretofore mentioned, and leading from the switch member 31 there is a conductor 41 which is connected at its other end to the igniting device 15 carried by the head 13 of the chamber 10. 90 Leading from the switch member 29 there is a conductor 42 connected, as at 43, to the conductor 39 heretofore mentioned. Leading from the switch member 29, there is a 95 conductor 44, and such conductor is connected to the igniting device 16 mounted in the head 14 of the chamber 10.

The device operates in the following manner: With the parts in the position shown in Fig. 1, an explosive charge under pres- 100 sure is admitted by way of the intake manifold 18, port 17, port 25 in the piston 23 and opening 27, to the space between the piston 23 and the head 14 of the chamber. As this charge under pressure is taken in, 105 the piston is moved to the right until it engages the flange 20 of the sleeve 19. As this takes place, the sleeve 19 is moved to the right, in which position it is shown in Fig. 2. Simultaneously with this movement, the 110 piston 23 engages the sliding pin 28 and connects, through the medium of the switch

29, the conductors 42 and 44. This establishes a circuit to the igniting device 16 and fires the charge contained in the space to the left of the piston in Fig. 2, and this charge
5 passes out through the left-hand open end of said sleeve 19, the exhaust port 12 of the chamber 10, to the intake passage 9 of the turbine, and into the presence of the rotor 6 thereof, which it serves to drive.

10 Referring to Fig. 2, it will be noted that immediately this action takes place, a charge is taken in through the intake passage 16', the port 24 of the piston, and by way of the opening 26 of the piston enters the space
15 between the piston 23 and the head 13 of the chamber. This pressure forces the piston to the left in Fig. 2, as soon as the pressure of the ignited charge falls below that of the incoming charge, and as the piston travels
20 to the left, the space on the right thereof will be filled with the incoming charge until the piston engages the flange 21 of the sleeve 19 and moves the same to the left in which position it is shown in Fig. 1, thus closing
25 the intake passage 16' and opening the exhaust passage 11. During this movement, the piston 23 engages the sliding pin 30, and through the medium of the switch member 31, completes a circuit through the
30 conductors 39 and 41 to the igniting device 15, firing the charge at the right of the piston in Fig. 1, which charge passes outwardly through the right-hand open end of the sleeve 19, and through the passage 11, by
35 way of the intake pipe 8, to the rotor 6 of the turbine 5 which it serves to drive.

By reason of the circular series of openings 22, it is apparent that the sleeve 19 need not be guided in its movement since
40 regardless of circumferential movement of the sleeve, a charge will always be fed inwardly of said sleeve to the proper side of the piston.

45 From the foregoing it is apparent that the present invention provides means whereby explosive charges are intermittently presented to the rotor of the turbine to drive

the same, and that after the device has been started the same is automatic in its operation and will continue to supply the turbine
50 with products of combustion under pressure until the supply of fuel has been cut off.

What is claimed is:

1. A power impulse generator comprising a cylinder having an inlet and an outlet
55 port at each end thereof, a sleeve movable within said cylinder, said sleeve having a plurality of openings passing through its side wall at a point near each end of the sleeve, a piston freely movable within the
60 sleeve and serving to reciprocate said sleeve in response to the pressure of each fuel charge entering said cylinder, said piston having a plurality of passages adapted to register with the inlet ports of the cylinder
65 and by virtue of the openings in said sleeve to establish communication between the inlet ports and the interior of the cylinder, and means operating in conjunction with the inlet and outlet ports, the openings in
70 the sleeve and the passages in the piston for causing successive explosions for the purpose specified.

2. A power impulse generator comprising a cylinder having an inlet and an outlet port
75 at each end thereof, a sleeve movable within said cylinder, said sleeve having a plurality of openings passing through its side wall at a point near each end of the sleeve, a piston freely movable within the sleeve and serv-
80 ing to reciprocate said sleeve in response to the pressure of each fuel charge entering said cylinder, said piston having a plurality of passages adapted respectively to register with the inlet ports of the cylinder and the
85 openings in the ends of the sleeve to establish communication between the inlet ports and the interior of said cylinder, and means operating in conjunction with the inlet and
90 outlet ports, the openings in the sleeve and the passages in the piston for causing successive explosions for the purpose specified.

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