No. 879,763. PATENTED FEB. 18, 1908.

C. R. GERGLER.

EXPLOSIVE MOTOR.

APPLICATION FILED MAY 28, 1907.

Fig. 2.

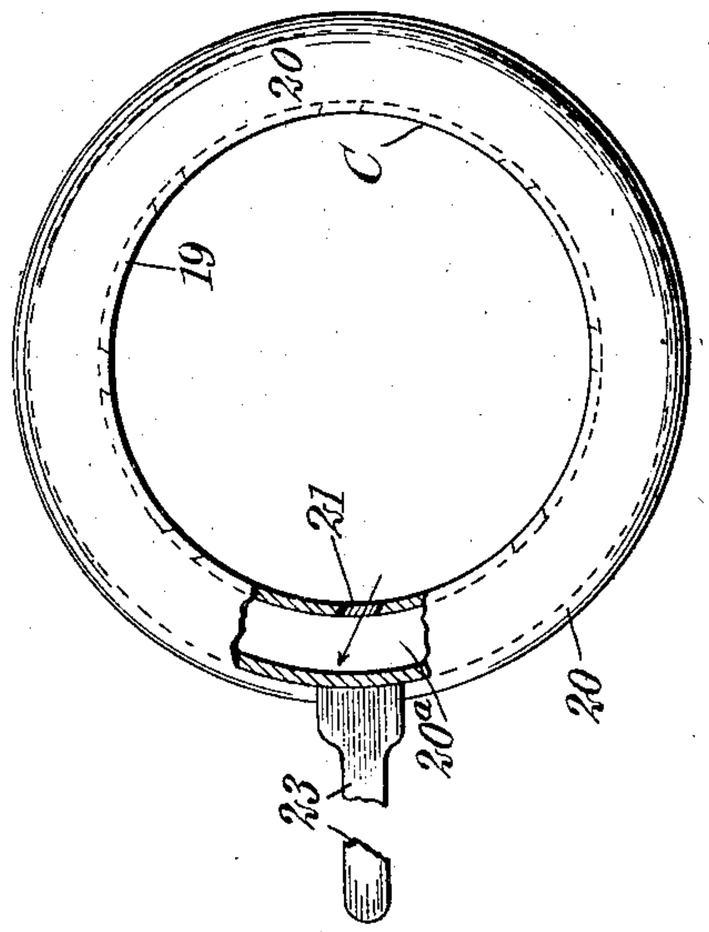


Fig. 3.

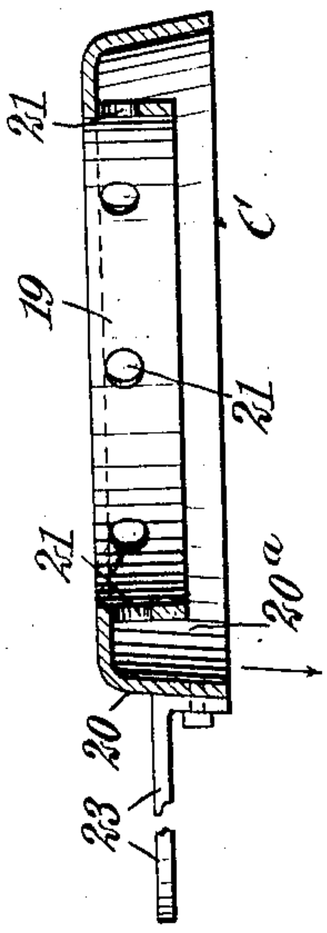
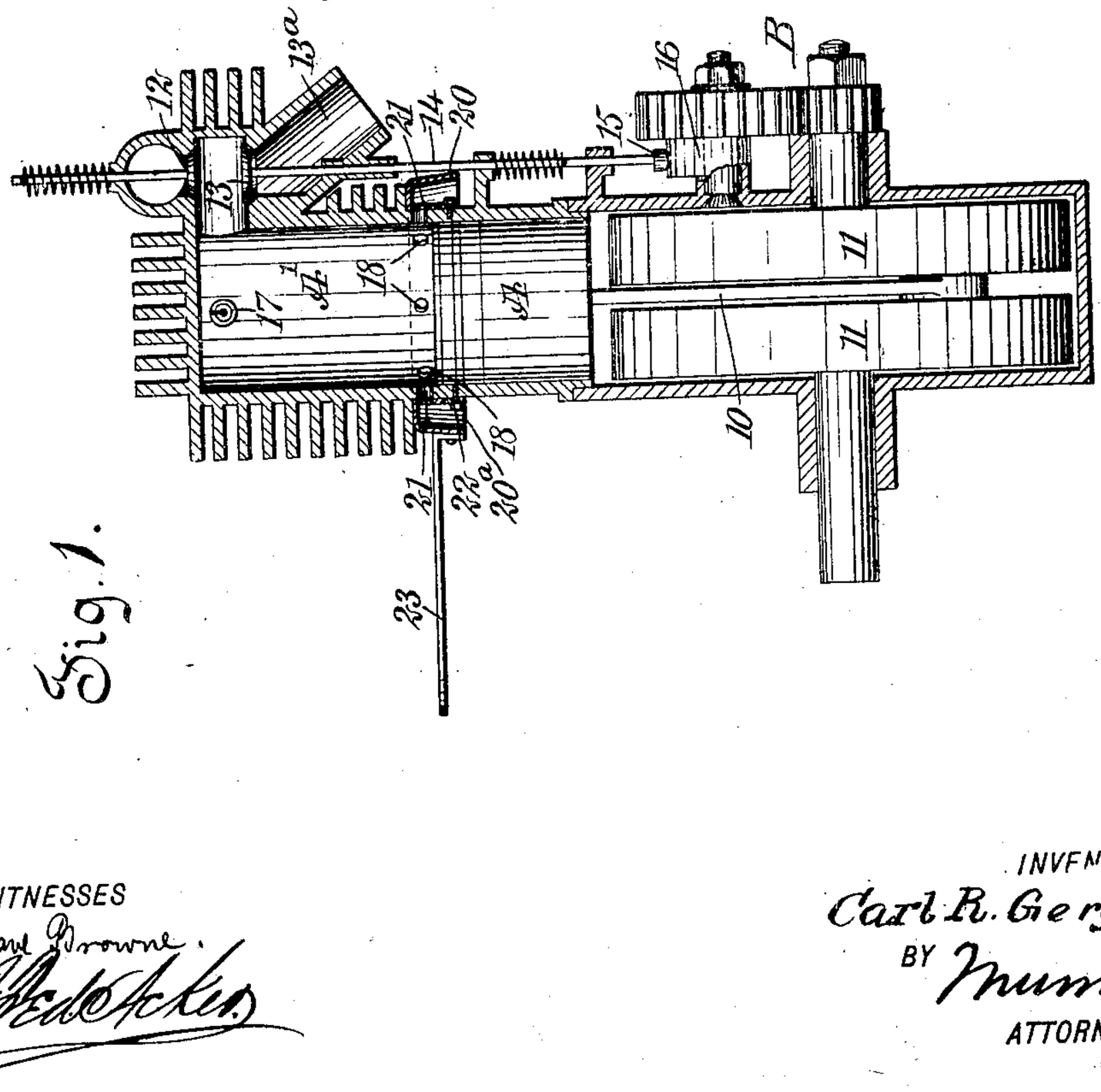


Fig. 1.



WITNESSES

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EXPLOSIVE-MOTOR.

No. 879,763. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed May 28, 1907. Serial No. 376,048.

To all whom it may concern:

Be it known that I, CARL R. GERGLER, a subject of the German Emperor, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and useful Improvement in Explosive-Motors, of which the following is a full, clear, and exact description.

The invention relates particularly to air-cooled, four-cycle explosive motors intended to be used for the propulsion of motor cycles of that type having admission and exhaust valves situated at the top of the cylinder, and wherein the cylinder is furthermore provided with one or more exhaust ports, so situated that the piston upon reaching the lowest point of the stroke allows the interior of the cylinder to come in communication with the atmosphere.

The purpose of the invention is to provide the cylinder with means whereby to open or close said exhaust ports at will and as the situation may require.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section through the motor, and the improved valve applied to the exhaust ports in the cylinder; Fig. 2 is a sectional plan view of the improved valve drawn upon an enlarged scale; and Fig. 3 is a vertical section through the valve.

It is a well known fact that the weight of a motor for a motor cycle is necessarily limited, and consequently the power. As a rule when climbing steep, or more important still, long hills with the present motors they slow down and sometimes stop. While climbing a hill the stress on the power is the greater, the combustion of fuel reaches its maximum, the cooling becomes defective owing to the low speed of the cycle, the cylinder becomes over-heated, pre-ignition follows, and the motor works badly, or as stated, stops. A simple way to overcome these troubles would be to allow as much of the burned gases as possible to escape as soon as their usefulness has ceased; that is, when the piston has arrived at the lowest point on the explosive stroke, consequently the time during which the burned gases remain in the cylinder would be greatly reduced, the cylinder would remain cooled, the pressure that has to be overcome by the piston during its upward stroke while clearing the cylinder would be reduced in proportion, and the motor would thereby gain in power and in speed. There are, however, inconveniences connected with such a construction which it is the purpose of my invention to overcome. To that end I have constructed a motor that will run the same as other motors upon a level surface where all of its power is not required, and at the same time be able to produce the greatest power possible at any moment, or when climbing a hill or passing a vehicle, and without any inconvenience to the rider or loss of time.

In the form of the motor illustrated in Fig. 1, A′ represents the cylinder and A the piston operating therein, the said piston being shown as provided with a rod 10 operated from cranks 11. At the upper end of the cylinder A′, an admission valve 12 is located, and below the admission valve 12 an exhaust valve 13 is suitably placed over the opening to the exhaust tube 13ª that leads to the muffler. The exhaust valve 13 is shown as provided with a rod 14 having a head 15 at its lower end, which engages with a cam 16 connected with one of the reducing gears B. The cylinder A′ is provided with the customary spark plug 17, but the cylinder A′ is provided with a series of exhaust ports 18, which exhaust ports are located slightly above the upper face of the piston A when at the lowest point in its explosive stroke. These ports 18 may be multiple, or a single such port may be provided, preferably, however, a number of ports are employed, as is illustrated. My improvement consists in the absolute control of these exhaust ports 18 for the purposes that have been stated. To that end I further provide a rocking valve C which is of a ring type, and is mounted for free movement at the exterior of the cylinder over the ports 18 therein. As is shown in Figs. 2 and 3, particularly in Fig. 3, the valve C consists of a sleeve 19 and a hood 20 that extends out from the upper marginal portion of the sleeve and then downward beyond its lower edge, and is spaced from the said sleeve so as to provide an annular chamber 20ª. The sleeve 19 is usually integral with the hood 20, although

the two parts may be made separate and connected in any approved manner, and the said sleeve 19 is provided with a series of ports 21 corresponding in number and arrangement with the exhaust ports 18 in the cylinder A′, so that by turning the valve C the exhaust ports 18 may be closed absolutely or partially, or the said ports may be fully opened for the free escape of the dead gases contained in the said cylinder.

The movement of the valve C is under the complete control of the rider, since a projection 23 from the exterior portion of the valve is connected in any suitable or approved manner to be operated from a point adjacent the driver's seat. The valve C may be held in position on the cylinder A′ in many ways. In the drawings, in Fig. 1, a collar 22 is illustrated as being secured to the exterior of the cylinder, with which collar the lower edge of the sleeve 19 engages, having free movement thereon. The valve C constructed in this manner had two functions to perform, namely, it is so constructed that it can be moved by means of a lever in such a way as to thoroughly control the ports 18 at the will of the rider, and it is further so constructed by reason of the hood 20 that the burned gases, oil and flames are carried to a point or place where they can be safely discharged into the air, without any back pressure or possibility of their causing the rider inconvenience.

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

1. In explosive motors, a cylinder and its piston, said cylinder being provided with an exhaust port above the piston when the latter is at the limit of its explosive stroke, and a manually operated valve for closing said exhaust, said valve comprising a substantially U-shaped ring, the inner face of the ring being provided with openings adapted to register with the exhaust port of the cylinder.

2. In an explosive motor, a cylinder and its piston said cylinder being provided with an auxiliary port above the piston when it is at the limit of its explosive stroke, and a manually operated valve for the auxiliary exhaust, which valve is independent in its action of the main exhaust valve of the motor.

3. In an explosive motor, the combination with a cylinder provided with a main and an auxiliary exhaust port, of a mechanically operated valve for the main exhaust, and a manually operated valve for the auxiliary exhaust.

4. In an explosive motor, the combination with a cylinder provided with a main and an auxiliary exhaust port, of a mechanically operated valve for the main exhaust, and a manually operated valve for the auxiliary exhaust, the one valve being independent in its operation of the other.

5. In an explosive motor, a cylinder and its piston, said cylinder being provided with an exhaust port above the piston when the latter is at the limit of its explosive stroke, and a manually operated valve for said port, and an exteriorly located protective hood for the said manually operated valve.

6. In an explosive motor, the combination with a cylinder and its piston, the cylinder being provided with a main and with auxiliary exhaust ports, the auxiliary exhaust ports being located at a point above the piston when at the limit of its explosive stroke, of a mechanically operated valve for the main exhaust, and a manually operated valve for the auxiliary exhaust ports, said manually operated valve including a sleeve mounted to turn upon the cylinder and provided with a series of openings corresponding in position and number to the position and number of the auxiliary ports.

7. In an explosive motor, the combination with a cylinder and its piston, the cylinder being provided with a main and with auxiliary exhaust ports, the auxiliary exhaust ports being located at a point above the piston when at the limit of its explosive stroke, of a mechanically operated valve for the main exhaust, and a manually operated valve for the auxiliary exhaust ports, said manually operated valve including a sleeve mounted to turn upon the cylinder and provided with a series of openings corresponding in position and number to the position and number of the auxiliary ports, and a hood extending from the upper portion of the sleeve outward and thence downward to a point below the lower edge of the sleeve whereby a chamber is formed between the outer face of the sleeve and the inner side face of the hood.

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

CARL R. GERGLER.

Witnesses:

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