

Oct. 20, 1931.

J. B. HAWTHORN ET AL

1,828,657

MOTOR

Filed Feb. 16, 1927

2 Sheets-Sheet 1

Fig. 1.

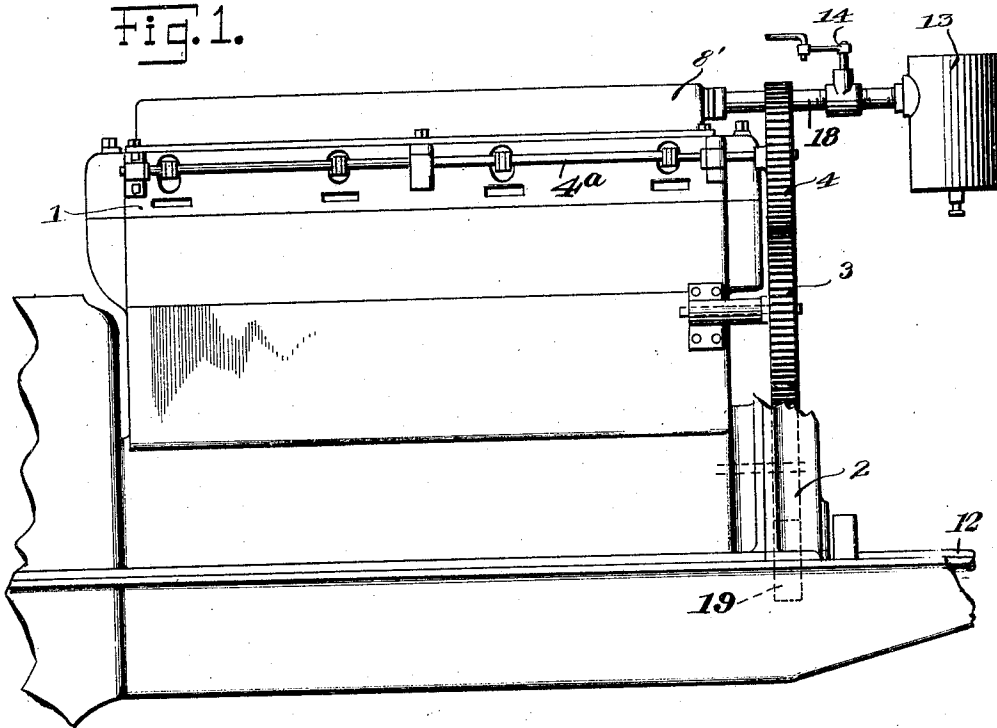
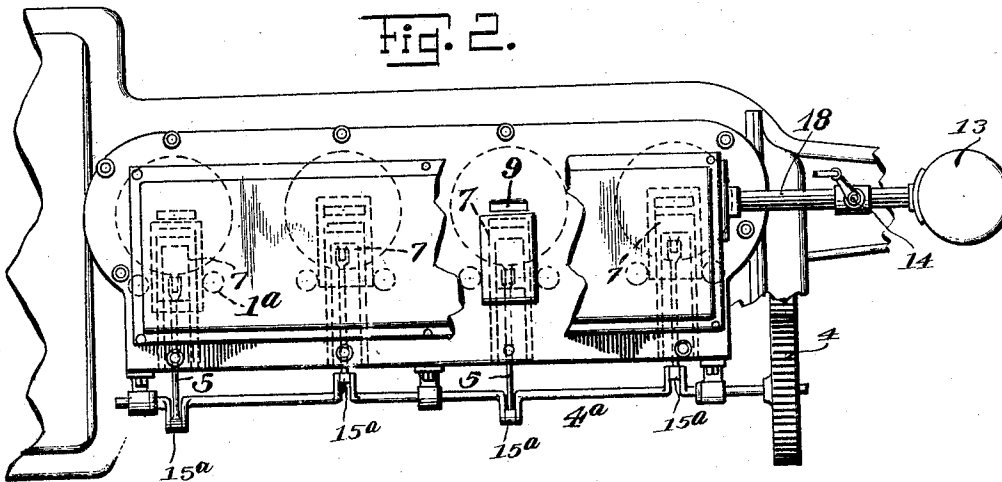


Fig. 2.



WITNESS

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2 Sheets-Sheet 2

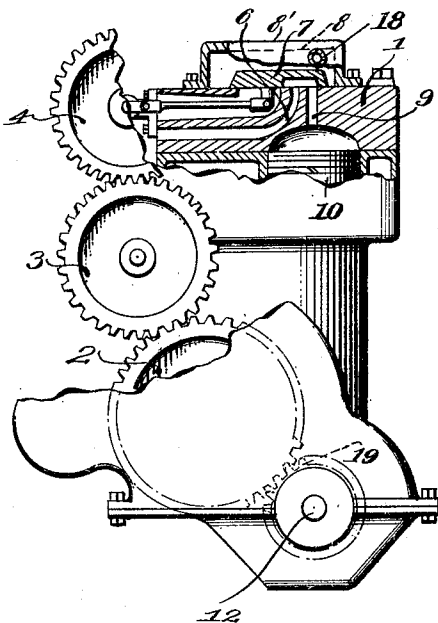


Fig. 3.

Fig. 5.

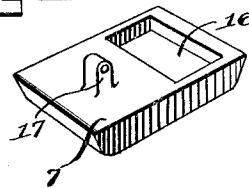
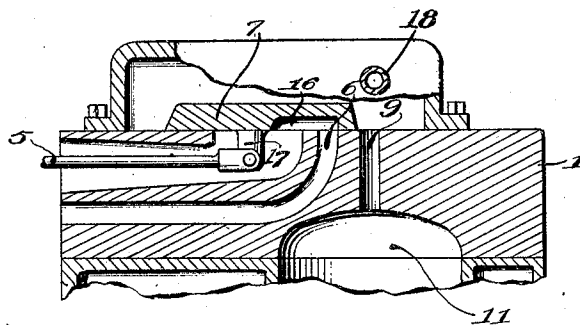


Fig. 4.



WITNESS

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MOTOR

Application filed February 16, 1927. Serial No. 168,691.

This invention pertains to motors such as are employed in the propulsion of automobiles and for any purposes for which an internal combustion motor is usually employed.

5 More particularly the invention comprises a cylinder head which may be substituted for such structures now employed, and which is adapted, because of its construction, to utilize a compressed gaseous fluid as the propelling medium of the motor or engine.

Referring to the drawings:—

Figure 1 represents a side elevational view of a motor embodying the subject matter of the present invention,

15 Figure 2 represents a top plan view of the engine shown in Fig. 1, parts being broken away for purposes of clearness,

Figure 3 is a vertical section through a portion of the motor showing the construction of the attachment forming the subject matter of the present application,

Figure 4 is an enlarged sectional view of the cylinder head and valve construction more completely illustrated in Fig. 3, and

25 Figure 5 is a bottom view of the valve employed in accordance with the present invention showing the opening through the valve and the lug for actuating the valve as more specifically described hereinafter.

30 In carrying out our invention we make use of an ordinary combustion engine block having the valves 1^a which are closed and disconnected from the usual means of actuation for said valve, not shown. These valves might also be removed from their seats without, in any way, hampering the efficiency of operation of my invention. The invention comprises the cylinder head 1, attached to the motor as shown, gear wheels 2, 3 and 4 intermeshing with each other being also affixed to the standard motor. Within the cylinder head 1 are formed ports 6 and 9 and the piston cylinder designated at 11. Gear wheel 4 has crank shaft 4^a integral therewith, which has the crank 15^a which is attached to a rod 5 which is in turn connected to valve 7 by means of lugs 17, the said valve 7 being adapted to open and close the ports leading into the piston cylinder. Secured to the valve head 1 is the housing 8' defining a

pressure chamber 8, the valve 7 operating within said pressure chamber. Connected to the pressure chamber 8' is a tank 13 in which a gaseous propelling medium for the engine 1 may conveniently be here introduced under pressure, the supply of propellant being adjusted by means of valve 14 interposed between the tank 13 and the housing 8' defining the pressure chamber. This valve 14 is inserted in a pipe 18 connecting the tank 13 with the chamber 8. The valve 7 is provided at its under surface with an opening 16 as shown in Figs. 4 and 5, thus permitting the valve to perform its function as hereinafter set forth.

65 The operation of the invention is as follows, it being assumed that compressed air is the propelling medium employed. Compressed air from any convenient source is introduced into the tank 13, the valve 14 being closed until a desired pressure is obtained within said tank, it must of course be constructed sufficiently strong to permit the taking of high pressure without leakage. The air is fed into the chamber 8' through the pipe 18 by opening the valve 14, the valve 7 being in the position shown in Fig. 4. The building up of the pressure in chamber 8 causes the pressure in cylinder 11 to be increased, due to the connection of cylinder 11 with chamber 8 through port 9. This increase in pressure causes the piston 10 to be depressed, thus actuating the gear 19 which is enmeshed with the gear train 2, 3 and 4. This series of gears times the operation of valve 7 so that when the piston is actuated to its farthest point the valve 7 will close over the port 9, which will then permit the release of pressure through port 9 into opening 16 of the valve 7 and thence out through the exhaust port 6. Upon the release of the pressure the piston returns to its starting position, then valve 7 sliding back to permit the reopening of the port 9, the admission of air under pressure to chamber 11, the actuating of piston 10, the cycle of operations thus being repeated as long as there is sufficient pressure retained in the tank 13. The valve 7 is moved to operating position at the start, if necessary, by the actuation of the crank shaft

12 by means of an ordinary automobile hand crank, not shown, in the usual manner, crank shaft 12 communicating with the gear wheel 19 the motion of which is imparted to the series of intermeshing gears 2, 3 and 4 up to the connecting rod 5 and thence to the valve 7.

It will thus be seen that the actuation of the piston 10 by means of pressure built up in the chamber 8 from the tank 13 is so timed as to cause the motion of the valve 7 to open and close the port 9 in such manner that the pressure can be discharged into and exhausted from the cylinder 11 at the proper intervals.

It is desired to emphasize the fact that the specific adaptation of the invention as herein described in the specification and drawings is illustrative only and it is considered obvious that many modifications thereof can be made without departing from the spirit of the invention.

We claim:—

In a cylinder head for converting a gas engine to a fluid pressure motor, a pressure chamber having an intake port, an exhaust port, a cylinder connecting passage, and a laterally extending passage, a slide valve for controlling said exhaust port and said cylinder connecting passage having a depression in the lower surface thereof communicating with said exhaust port and said cylinder connecting passage, a lug projecting from said lower surface adjacent said depression and a pitman connected to said lug for moving said valve alternately, to connect said cylinder connecting passage to said pressure chamber and to said exhaust port.

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