A. FRESCHL & J. L. FRESHEL.

MOTOR FUEL SUPPLYING APPARATUS.

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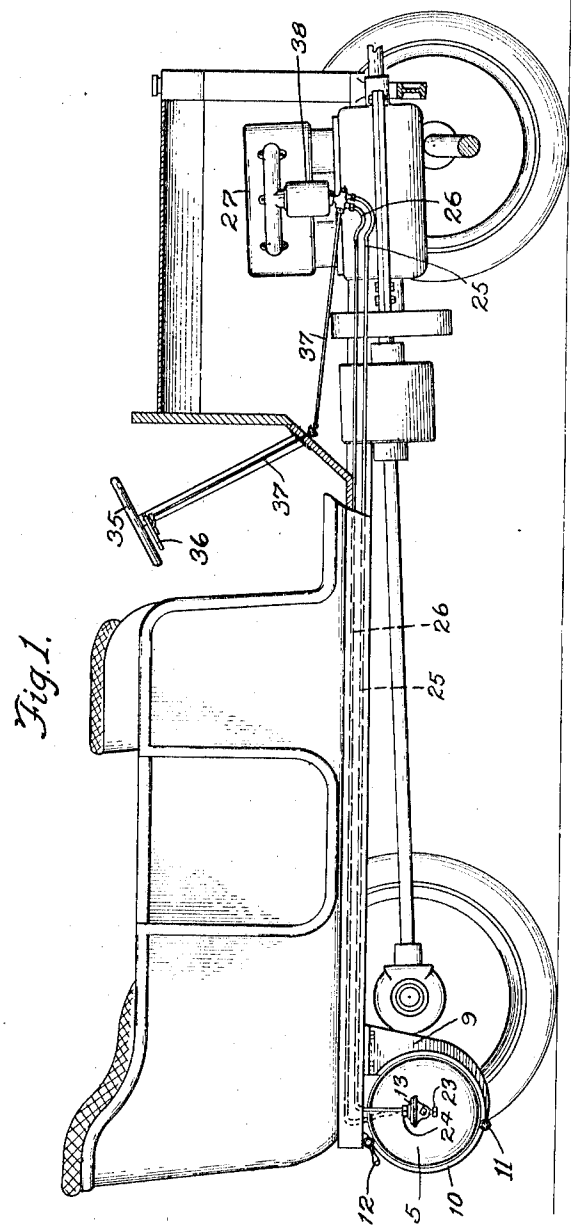


Fig. 1.

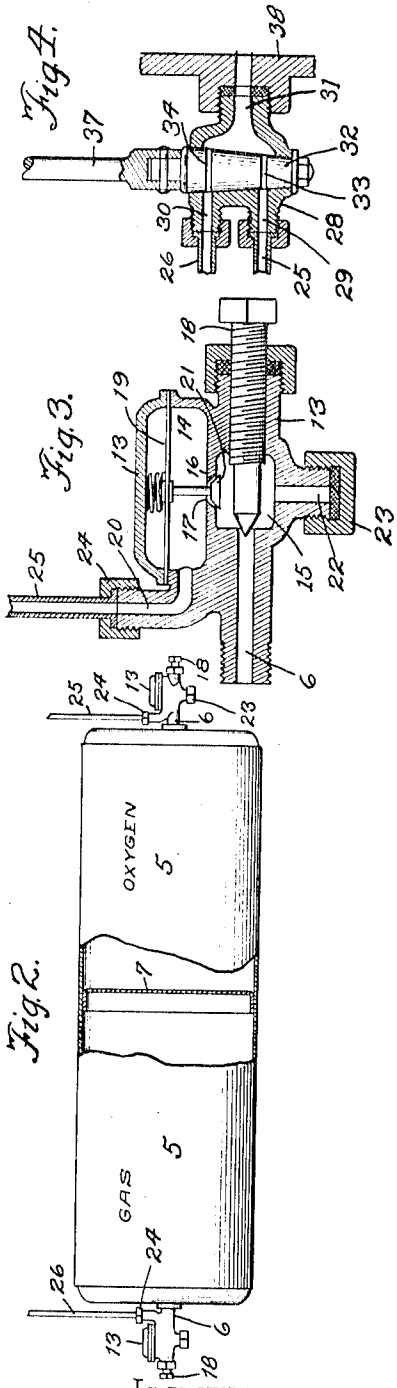


Fig. 2.

Fig. 3.

Fig. 4.

WITNESSES.

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UNITED STATES PATENT OFFICE.

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MOTOR-FUEL-SUPPLYING APPARATUS.

1,096,901. Specification of Letters Patent. Patented May 19, 1914.

Application filed April 18, 1912. Serial No. 691,627.

To all whom it may concern:

Be it known that we, ALFRED FRESCHL and JOHN L. FRESHEL, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Motor-Fuel-Supplying Apparatus, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to apparatus for supplying fuel to explosive or internal combustion engines, and contemplates suitable holders or containers separately charged with the ingredients of the explosive fuel or mixture in predetermined quantities under pressure and adapted to be prepared at a central station with their charges and adapted to be shipped or delivered as a package to the user and by him placed in communication with the engine or charged while associated with the engine, and means to control the delivery of the ingredients in the form of explosive fuel or mixture to the engine.

In the drawings Figure 1 is a view of an apparatus embodying our present invention; Fig. 2 is a sectional view of a form of container or holder that may be used; Fig. 3 is a sectional view of suitable valve mechanism for the container, and Fig. 4 is a sectional view of a suitable controlling valve in the pipe connections.

In carrying out our invention we employ suitable containers of fluid-tight construction adapted to be prepared respectively at a central station with charges of explosive gas and oxygen under pressure therein and adapted to be delivered or shipped to the user and by him placed in communication with means to feed their contents as a mixture to the engine or charged while in connection with the associated engine, and means to control the mixing of the oxygen and explosive gas in predetermined quantities or volume.

In the practice of our invention we may employ any suitable gas which when mixed with oxygen will produce an explosive mixture suitable for fuel in various types of internal combustion or explosive engines; we may use producer-gas generated in a suction-producer by drawing air through a body of burning charcoal, coke or other carbon, or we may use the vapor or gas of hydrocarbons such as gasolene or petrol, or of kerosene or alcohol, or we may use acetylene gas. The oxygen and gas are introduced in measured charges or volumes into fluid-tight holders or containers 5, of any suitable form and dimensions for transportation and shipment, each having an inlet and outlet pipe 6 to allow its contents to be introduced and discharged and controlled by any suitable valve mechanism which may be closed to shut off its escape and render the vessel hermetically sealed. The containers are separate in that each is a separate chamber or compartment, though they may be arranged in sets of two or more chambers in the same casing or body as, for example, by using a single tank having a dividing wall 7 as shown in Fig. 2. In either case the proportion of gas and oxygen are predetermined and regulated according to requirements to vary the power-effect of the explosion of their ultimate mixture in the engine, while the quality of the mixture produced by the contents of the associated containers is constant and uniform, and the quantity may be varied to provide predetermined amounts of running-fuel for runs of different durations or distances. The containers may be charged with their contents at the central or supply station and then so delivered or shipped to the user as a package or unit adapted to be placed by their pipes 6 in communication with the engine to which it is intended to supply the fuel, and where such engine is a vehicle engine the containers may be made in the form of a tank attachable to and detachable from the vehicle so as to replace the gasolene tank now commonly mounted on the vehicle; as shown in the drawing in the present instance the tank is made in the cylindrical form of a type of gasolene tank now frequently used on automobiles, and may be detachably secured in place by any suitable means such as the half-round brackets 9 provided with straps 10 hinged thereto at 11 and held in place by any suitable lock 12. It is of course understood that the tank may be of any suitable form or contour and may be attached in any convenient position to the associated vehicle which may

be an automobile, motor boat, aeroplane or any other carrier.

The contents of the chambers are compressed or under pressure and are introduced through the opening 6, and in order to deliver the material to the engine under uniform pressure we provide each chamber with a reducing-valve of any suitable construction; a closing valve also may be used to seal the chamber after it is charged and before it is used. For these purposes the pipe 6 is provided with an enlarged extension 13 divided into upper and lower chambers 14 and 15 by a wall 16 having a passage 17; the chamber 15 has a screw-threaded needle valve 18 arranged in the line of the pipe 6 and having its outer end squared to receive any suitable adjusting tool to close the pipe to seal the same when desired and to open it to permit the flow of the contents of the tank when desired; the upper chamber 14 has an equalizing valve comprising a diaphragm 19 above its opening into the outlet pipe 20 and a depending valve stem having a valve 21 normally below the passage 17 and adapted to seat more or less therein under varying pressure applied to its diaphragm. The chamber 15 also has an inlet 22 closed by a removable screw cap 23 which also fits the end of pipe 20. When the chamber is to be charged at a central station the cap 23 is removed from inlet 22 and screwed upon the end of the pipe 20, and the charging-pipe leading from the charging-apparatus is connected to the inlet 22 in its place and the valve 18 is opened whereby the fuel ingredient is passed to its proper chamber. When each chamber is charged its associated valve 18 is closed to hermetically seal it and the cap 23 is restored to its place on the inlet pipe 22, whereby a definite quantity of fuel-ingredients is ready for use. When a pair of containers or the two chambers of a single container are charged with their respective fuel ingredients and are delivered or shipped to the user, their outlets 20 are connected by suitable couplings or unions 24 to the supply pipes 25 and 26 of an explosive engine 27, usually to the manifold thereof.

Any suitable mechanism is utilized to control and regulate the feed of the fuel ingredients to the engine under the control of the operator. For example, the pipes 25 and 26 may lead to a suitable valve-casing 28 forming a mixing chamber, having two inlets 29 and 30 connected respectively to the pipes and a single outlet 31 leading to the engine, and containing a valve 32 having ports 33 and 34 adapted to register with inlets 29 and 30 when the valve is in one position and closing the inlets when in another position, the valve being controlled by the operator, as the chauffeur at the wheel 35, by means of handle 36 having suitable connections 37 to the stem of the valve. When the parts are assembled with the reducing-valves properly set for the desired pressure and the valve 32 open, the fuel ingredients will pass from their chambers to the mixing-chamber 31 and thence to the engine, and the communication of the engine with the fuel chambers being open the suction of the intake stroke of the engine pistons will draw the fuel therein in mixed condition, it being understood that a supplemental chamber 38 may be provided intermediate the engine and chamber 28 if desired to more intimately mix the fuel ingredients and also insure a larger supply of mixed fuel at the initial operation of the engine.

While the chambers may be charged at a central station and delivered to the user, it is also to be understood that our invention contemplates a vehicle such as above stated provided with chambers forming permanent parts of its equipment and which may be so charged while mounted thereon by merely closing the valve 32 and placing the respective inlets 22 in temporary communication with suitable charging apparatus at such central station or other place of supply.

The apparatus will not only supply the fuel required to run the engine any given distance or period of time regulated by the predetermined amount of the fuel-content, but by reason of the mixture being under pressure it will in connection with other appliances also make the engine self-starting when the control-valve is opened and the sparking-plugs are provided with electric current from any suitable source of electrical supply. The fuel mixture is composed of an explosive gas and oxygen which is fed direct to the engine by closed pipe-connections, and the user dispenses with the use of gasolene and the hitherto necessary local vaporizer or sprayer required to vaporize his gasolene or other liquid fuel and the hitherto necessary local carbureter for mixing or mingling the vaporized liquid and air, and obviates the attendant and well-known objections and defects of these and their associated parts hitherto required to produce a proper fuel mixture and supply.

By this invention the explosive power of the fuel is increased as the ingredients are in a dry state, and increased power is obtained or a smaller motor may be used for any given load or work.

We claim:—

A pair of closed chambers containing separate charges of oxygen and vaporized hydrocarbon under pressure, a combined inlet and outlet pipe for each chamber, an extension on each pipe having a pair of communicating chambers, an inlet to one chamber and an outlet for the other, a cap for the in-

let, a pressure valve adapted to close the communication between the chambers, a valve controlling the communication of each of said pipes, with its associated extension, pipes leading from the extensions to a common outlet, and valve mechanism to control the communication of said pipes with the common outlet.

In testimony whereof we affix our signatures in presence of two witnesses.

ALFRED FRESCHL.
JOHN LYON FRESHEL.

Witnesses:
J. McRoberts,
H. C. Lust.