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EXPLOSION ENGINE.
APPLICATION FILED OCT. 4, 1916.

1,340,580. Patented May 18, 1920.

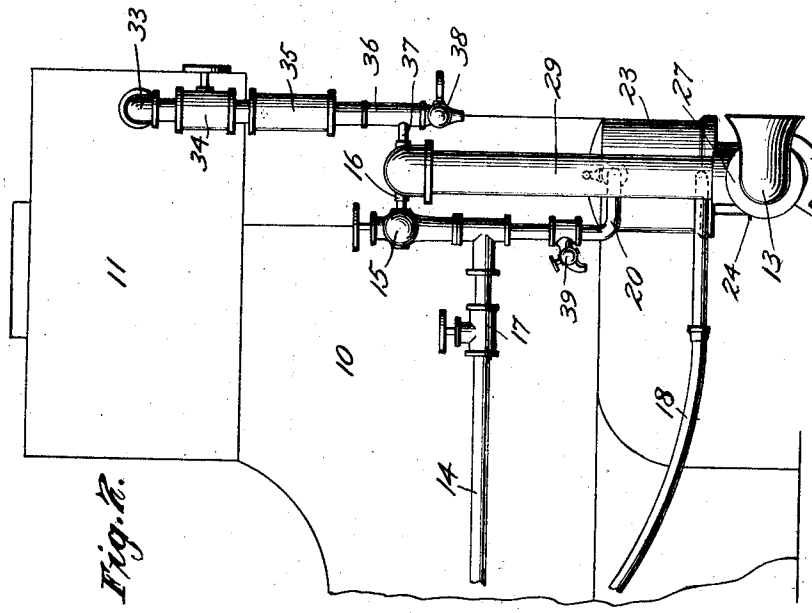


Fig. 2.

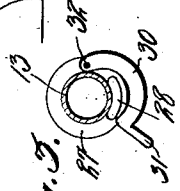


Fig. 3.

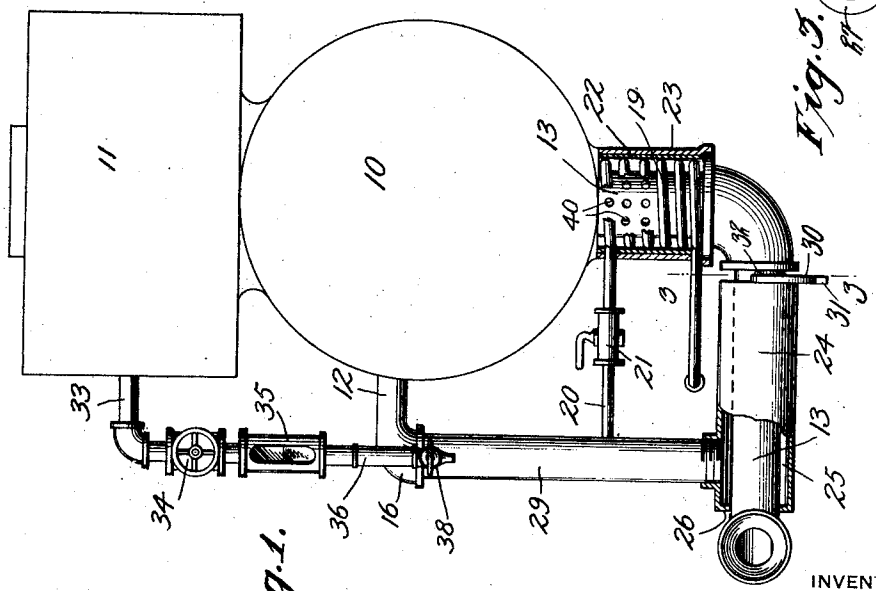


Fig. 1.

WITNESSES

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JOSEPH P. TREGO, JR., OF NEWTON, KANSAS; JOSEPH P. TREGO, ADMINISTRATOR OF JOSEPH P. TREGO, JR., DECEASED, ASSIGNOR TO JENNIE C. TREGO, OF NEWTON, KANSAS.

EXPLOSION-ENGINE.

1,340,580. Specification of Letters Patent. **Patented May 18, 1920.**

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To all whom it may concern:

Be it known that I, JOSEPH P. TREGO, Jr., a citizen of the United States, residing at Newton, in the county of Harvey and State of Kansas, have invented certain new and useful Improvements in Explosion-Engines, of which the following is a specification.

This invention relates to internal combustion engines and particularly to means for adapting such engines to the use of a heavier explosive than gasolene, and has for its object to provide means whereby the waste heat of the engine is conserved and used for heating a fuel such as kerosene oil and adapting it for use in the engine instead of gasolene.

Another object of the invention is to provide means whereby the heat of the explosive gases passing from the cylinder to the exhaust pipe is caused to raise the temperature of incoming kerosene oil to such a point that it will be in condition to form a suitable fuel for the engine when it enters the cylinder accompanied by sufficient air to form an explosive mixture.

Another object of the invention is to so arrange the fuel feeding mechanism that either gasolene or kerosene oil may be employed in the engine, and in practice gasolene is used to start the engine and continues to operate it until the parts become thoroughly heated, after which the kerosene is substituted and thus enables the engine to be driven at far less expense than when gasolene is used.

With the above as the principal object in view, the invention consists of the novel construction, combination and arrangement of parts hereinafter described, pointed out in the appended claim and illustrated in the accompanying drawings in which:

Figure 1 is an elevation of an internal combustion engine viewed from the cylinder end with the improved attachment for feeding heavy hydrocarbon thereto.

Fig. 2 is a side elevation of the same parts, and

Fig. 3 is a detail sectional view on the line 3—3 of Fig. 1.

In the drawings, 10 indicates the cylinder end of an internal combustion engine in outline upon the top of which is shown mounted a tank 11 for water. 12 is the inlet pipe for the combustible mixture feeding to the cylinder 10 and 13 is an exhaust pipe through which the heated and consumed gases pass from the cylinder. A pipe 14 leads from the gasolene tank and past a regulating valve 15 into the mixer 16, said pipe having a cut-off valve 17 when it is desired to wholly shut off the flow of gasolene to the engine. A second pipe 18 extends from a tank containing kerosene oil and approaching the exhaust pipe 13 where it leaves the cylinder, is there connected to a pipe coil 19 closely surrounding the exhaust pipe 13 for a greater or lesser distance in the length thereof. The opposite end of the coil 19 is connected by means of a pipe 20 having a cut-off valve 21 therein with the regulating valve 15. For the purpose of retaining the heat of the exhaust pipe around the coil 19, the latter is inclosed with one or more layers of asbestos 22 and over the asbestos is placed a jacket of sheet metal 23. There is thus formed a casing through which passes an exhaust pipe 13 as the heating medium for the kerosene coil 19. Perforations 40 of small size are made in the exhaust pipe within said casing through which the heated gases may pass directly into contact to the coil 19 and thus more quickly raise the temperature of the kerosene passing therethrough.

Just below the coil 19 the exhaust pipe 13 is covered by a second jacket 24 that extends for a greater or lesser distance along said pipe and is spaced therefrom to form an air passage 25 between its outer wall and the exhaust pipe 13. The ends of the jacket 24 are closed as at 26 and 27 through the latter of which is formed a curved inlet opening 28 for the entrance of air within the jacket and from thence through a pipe 29 to the mixer 16 where air combining with the gasolene or with the kerosene forms an explosive mixture for the engine. To regulate the quantity of air passing into the inlet opening 28, there is provided a gate valve 30 of the curved shape shown in Fig. 3 and having a handle 31 by which the gate may be manipulated. The gate is pivoted at 32 opposite the end from which the handle projects on the end 27 of the jacket 24 and by means of the handle said gate may be moved to entirely close the inlet opening 28, open it to full extent or to any degree desired, as is evident.

It is sometimes desirable to feed water into the cylinder with the explosive mix-

ture and for this purpose there is a pipe 33 connected to the tank 11 containing water, the outer end of said pipe turning downwardly and provided with a cut-off valve 34 below which is a sight feed cup 35 from which a pipe 36 extends downwardly sufficiently far to connect with a branch 37 leading to the mixer 16. A drain cock 38 terminates the lower end of the pipe 36 and a similar cock 39 is placed on the kerosene pipe 20 above the coil 19. By adjusting the valve 34, water will drip through the sight feed cup 35 at any rate desired and pass thence down into the mixer and with the air and gasolene or kerosene into the cylinder.

In starting the engine, the valve 17 is opened and gasolene through the pipe 14 used until the engine gets thoroughly heated, after which the valve 17 is closed and the valve 21 opened permitting the kerosene to flow through the pipe 18, coil 19 and pipe 20 into the mixer. The kerosene which was in the coil 19 is, by this time, thoroughly heated by the exhaust from the combustion of gasolene and upon opening the valve 21 the kerosene is in condition to form a suitable explosive mixture which being fed slowly into the cylinder, passes with equal slowness through the coil 19 and so become thoroughly heated by the exhaust gases. The air valve 30 will of course be opened and closed to regulate the inflow of air in the same manner as is done on all internal combustion engines. If water is desired with the fuel, the valve 34 will be opened and being convenient may be closed at any time.

What is claimed is:

In an explosive engine, the combination with a cylinder having inlet and outlet pipes, a jacket inclosing the latter, a mixer connected to the inlet to the cylinder, a plurality of fuel pipes leading to said mixer, one of them having a coil disposed within said jacket, said coil fitting closely about said outlet pipe, said outlet pipe having openings therein in alinement with the convolutions of said coil, whereby said coil will hold the gases from escaping into the jacket, although allowing the heat thereof to be directly imparted to the coil, for the purposes specified.

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

JOSEPH P. TREGO.

Witnesses:

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CHAS. C. HART.