March 1, 1927. A. GRUDZINSKI 1,619,612

THERMOSTATIC GASOLINE VALVE

Filed Feb. 27. 1924

Fig. 1

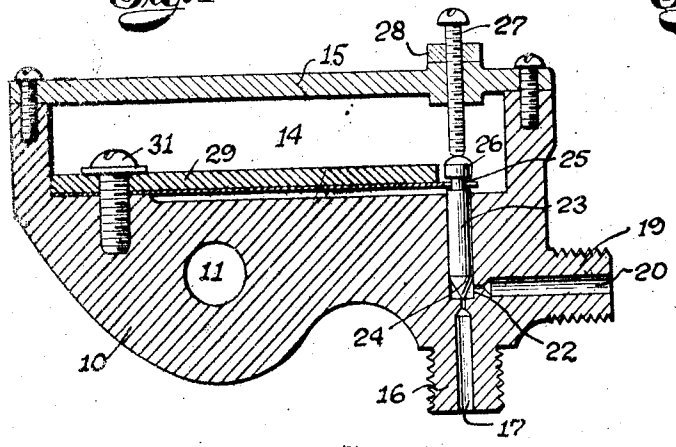


Fig. 2

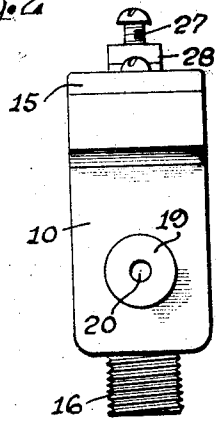


Fig. 3

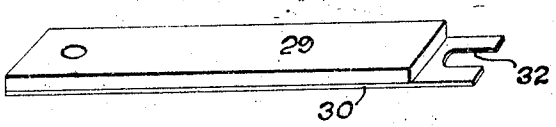
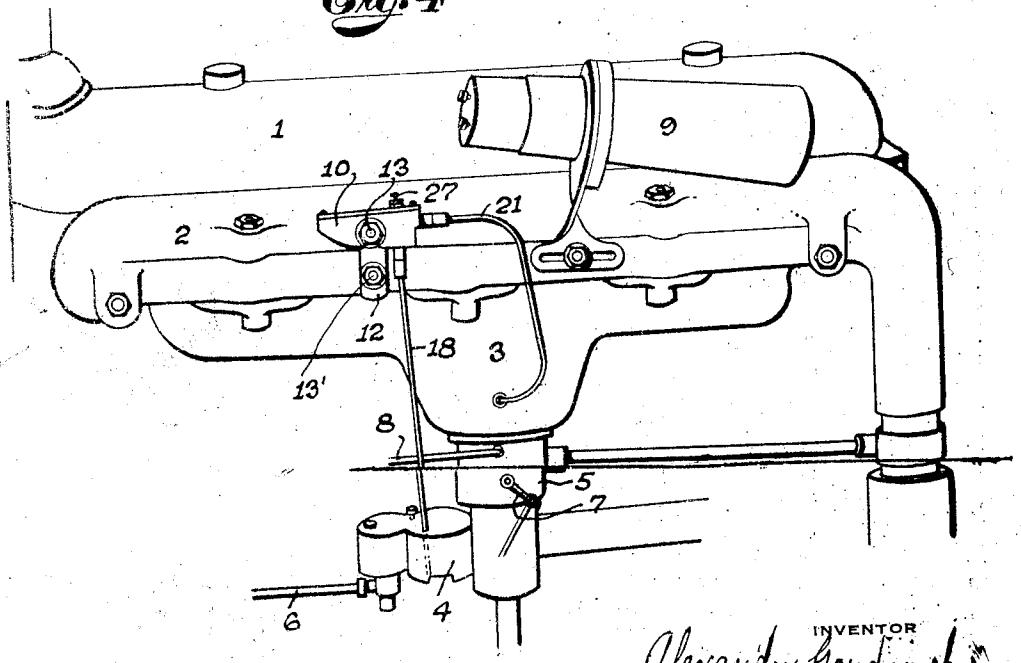


Fig. 4



INVENTOR
Alexander Grudzinski
BY
Townsend & Decker
ATTORNEYS

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UNITED STATES PATENT OFFICE.

ALEXANDER GRUDZINSKI, OF CAMBRIDGE SPRINGS, PENNSYLVANIA.

THERMOSTATIC GASOLINE VALVE.

Application filed February 27, 1924. Serial No. 695,600.

My invention relates to internal combustion engines and more particularly to means for feeding fuel thereto.

The object of the invention is the production of a simple and inexpensive device which may readily be attached to the engine of any conventional type of internal combustion engine and which shall automatically operate to adjust or regulate the supply of fuel to the engine cylinders depending on the temperature of the engine.

Briefly stated, my invention consists in attaching to a heat-conveying member of the engine, preferably the exhaust manifold, a thermostatically operated valve which shall be adapted to be connected to the carburetor or other fuel supplying part as well as to the intake manifold or other part connected with the engine cylinders and which shall be adapted to open and feed an auxiliary supply of fuel to the cylinders when the engine is cold and to close gradually to cut off the auxiliary supply when the engine warms up to a predetermined temperature. In other words, the position of the valve, whether open, closed or partially open is dependent entirely on the temperature of the engine, the temperature acting to automatically position the valve to regulate the auxiliary supply of fuel supplied to the cylinders in addition to that supplied through the carburetor in the ordinary manner.

With the above and other objects of the invention in view which will appear from the accompanying description, my invention consists in the novel parts and combinations thereof hereinafter more particularly described and then specified in the claim.

A practical embodiment of the invention is illustrated in the accompanying drawing in which:

Fig. 1 is a section taken through the thermostatic valve.

Fig. 2 is an end elevation thereof.

Fig. 3 is a perspective view of the valve arm.

Fig. 4 is a more or less fragmentary side elevation of a conventional type of internal combustion engine showing the valve attached thereto.

Referring in detail to the drawing:

1 indicates the removable cover for the engine block of an internal combustion engine, 2 the exhaust manifold, 3 the intake manifold, 4 the gasoline float chamber of a carburetor which is connected to the intake manifold by the pipe 5 and to a source of fuel supply by the pipe 6. 7 indicates the ordinary throttle valve for regulating the supply of fuel from the carburetor to the intake manifold and which is controlled by the operator, while 8 indicates the usual vacuum tank pipe which forms no part of my present invention. 9 indicates a horn which is attached to the engine in any desired manner, this and other parts of the engine not referred to also forming no part of my present invention.

10 indicates the body of my improved thermostatic valve which is provided with an opening 11 therein whereby it may be detachably secured to a bracket 12 by a bolt 13 passing through said bracket and opening. The other end of said bracket is bolted or otherwise secured to the exhaust manifold by means of a suitable bolt 13′ which is usually found on all motors either for holding the exhaust manifold to the engine block or for other purposes.

The bracket may be secured to any other heat conveying member of the engine if so desired. The thermostatic valve 10 is provided with an upper walled space 14 adapted to be closed by a cover 15 by suitable screws as shown. Said valve 10 is also provided with a screw-threaded nipple 16 having therein a vertical passageway 17, said screw-threaded nipple being adapted to be detachably secured to a pipe 18 extending downwardly through the top wall of the float chamber 4 and adjacent the base of said float chamber so that the lower end will always be within the fuel within the said chamber.

The valve 10 is also provided with a laterally extending screw-threaded nipple 19 provided with a passageway 20 therein, said nipple being detachably secured thereto by a pipe 21, the other end of which extends within the intake manifold 3. The passageways 17 and 20 connect with a bore 22 which communicates with the walled space 14. Slidably mounted in said bore 22 is a valve pin 23 provided with a lower pointed end 24 adapted to extend within and close the upper end of the passageway 17. Said valve pin 23 is also adapted to close the inner end of the passageway 20. The valve pin 23 is provided with a slot 25 and a head 26, said head 26 being adapted to be engaged by the lower end of an adjusting screw 27 which is mounted in and extends through the cover

15, the function of said adjusting screw being to limit the movement of the valve pin 23 in the bore 22. If so desired, a lock nut 28 may be provided whereby the adjusting screw 27 may be held in any desired or given position.

29 indicates the valve arm. The upper portion of said valve arm comprises hard rubber, gutta percha or other analogous material having a high co-efficient of expansion. The lower portion of said valve arm which is indicated at 30 comprises a strip of iron, steel or any other suitable material having a low co-efficient of expansion. The two strips of material are fastened together, said valve arm being held by one end in position within the walled space 14 by means of the screw 31 which is screwed within the body of the valve. The outer end of the strip 30 is cut out to form a U-shaped portion 32 engaging the valve pin within the slot 25 intermediate the head 26 and the body of said valve pin.

As the valve arm comprises two strips of material having different co-efficients of expansion it will flex when subjected to changes of temperature. When, therefore, the engine is cold, the valve arm acts to raise the valve pin 23 in the bore 22, thereby permitting the fuel to flow from the float chamber of the carburetor up through the pipe 18, through the passageway 17, into the bore 22, through the passageway 20, through the pipe 21 and into the intake manifold 3 of the engine, whereby an auxiliary supply of fuel will be supplied to the cylinders in addition to that supplied from the carburetor in the usual manner. As the engine grows warmer, however, the heat therefrom radiates to the thermostatic valve and the valve pin 23 is lowered in its bore by the action of the valve arm until the passageways 17 and 20 are finally closed to prevent the admission of any further auxiliary supply of fuel to the intake manifold.

It will be readily understood that the details of construction of my invention thus described may be varied considerably without departing from the spirit of the invention as set forth in the appended claim.

What I claim as my invention is:—

In combination with an internal combustion engine provided with an intake pipe, an exhaust pipe and a container for fuel, auxiliary fuel supply mechanism comprising a pipe line extending from said container to said intake pipe, means for controlling the passage of fuel through said pipe line, said means including a thermostat and a movable controlling valve operatively associated therewith, said thermostat being positioned to be subject to the heat within said exhaust pipe, and an adjustable stop member positioned adjacent said valve and constructed to engage the same to limit the extent to which said valve may be opened.

Signed at Meadville, in the county of Crawford and State of Pennsylvania, this 23rd day of February, A. D. 1924.

ALEXANDER GRUDZINSKI.