

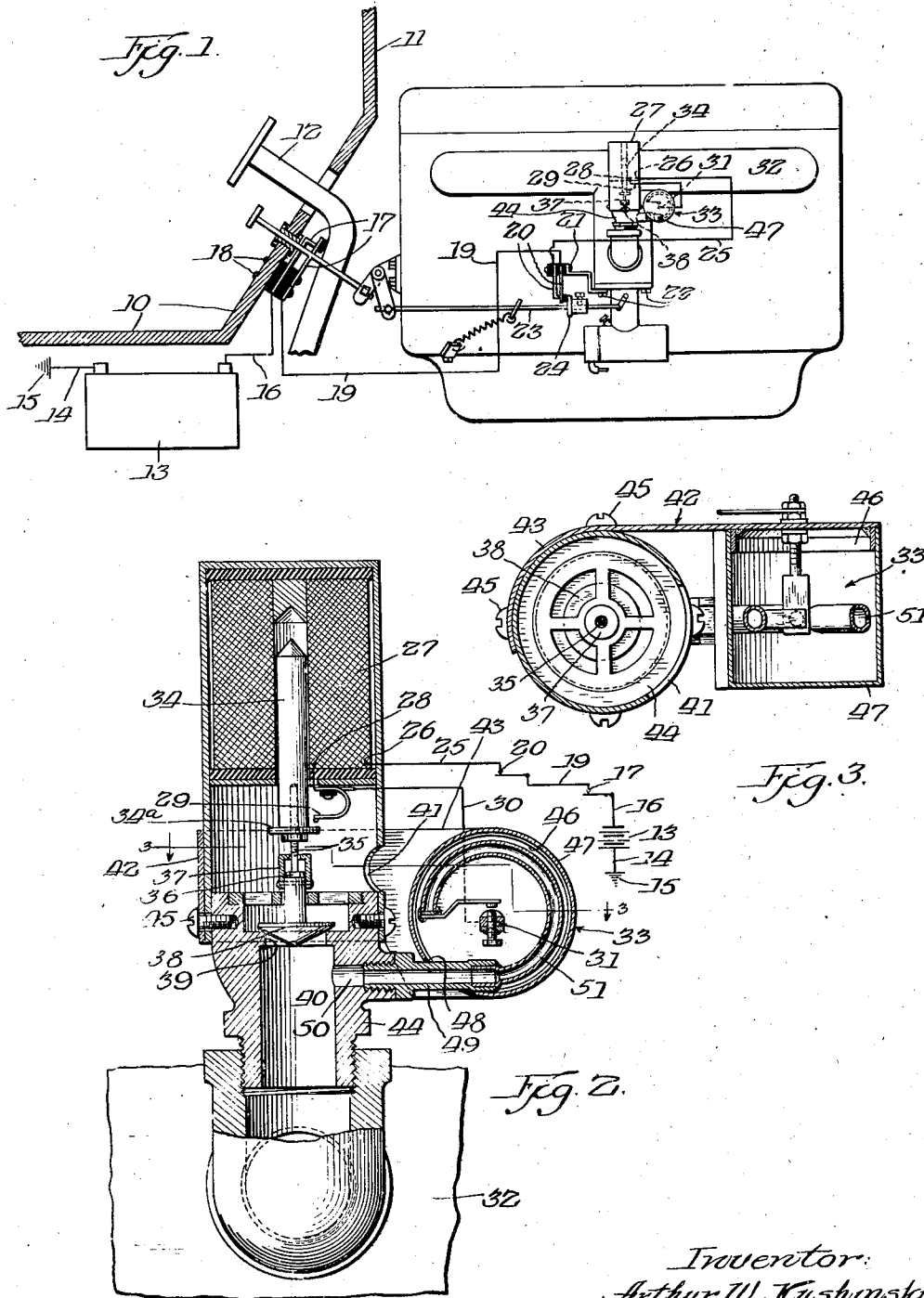
March 24, 1936.

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2,035,237

FUEL SAVING DEVICE FOR INTERNAL COMBUSTION ENGINES

Filed April 26, 1935



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UNITED STATES PATENT OFFICE

2,035,237

FUEL SAVING DEVICE FOR INTERNAL COMBUSTION ENGINES

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Application April 26, 1935, Serial No. 18,...

5 Claims. (Cl. 192—.01)

Among the objects of my invention are to create an automatic, attachable device adapted to be added to any internal combustion engine for saving fuel consumption; to supply such a structure which may also act as a safety means, and such other objects, advantages and capabilities as will later more fully appear and which are inherently possessed by my invention.

While I have shown in the accompanying drawing a preferred embodiment of my invention yet I wish it understood that the same is susceptible of modification and change without departing from the spirit of my invention.

Referring more particularly to the drawing: Fig. 1 is a diagrammatic figure showing my invention mounted in place on an automobile engine and the electrical circuit shown thereon; Fig. 2 is a longitudinal cross-section of my invention; and Fig. 3 is a plan section taken on the line 3—3 of Fig. 2.

The embodiment selected to illustrate my invention may be added to any form of internal combustion engine as for example that of an automobile. In Fig. 1 I show the floor boards 10 and the cowl 11 through which passes the clutch pedal 12 of an ordinary automobile. Preferably underneath the floor boards of the car is located a battery 13 having a wire 14 grounded to the frame of the car at 15. At the opposite side of the battery 13 a wire 16 leads to contact springs 17 which are fixed to the floor boards 10 by suitable means such as bolts 18 and insulated therefrom. The contact springs 17 are closed when the clutch pedal 12 is in clutch engaged position. Leading from the contact springs 17 is another wire 19 leading to second contact springs 20, which springs are fixed by suitable fastening means 21 to a bracket which is attached to the carburetor bolt 22 and insulated therefrom. When the accelerator rod 23 is in released position the contacts of contact springs 20 are closed by the adjustable stop 24 on accelerator rod 23. Leading from contact springs 20 a wire 25 leads to one side of the solenoid winding 26 so that electrical current may pass through the winding of said solenoid 27 to the other side 28 of the solenoid to locking contact spring 29, said locking contact spring being insulated by suitable insulating material and from locking contact spring 29 to wire 30 which leads to contact screw 31, which is suitably insulated from vacuum unit 33.

When a high vacuum is created in the manifold 32 the vacuum unit 33 is operated making contact at 31 which completes the circuit, (vacuum unit 33 is grounded to the motor, and the motor is grounded to the frame) energizing the solenoid 27 which operates the plunger 34 raising the same so that locking spring 29 makes contact on a washer or the like 34a of said

plunger 34 to establish a secondary circuit locking the solenoid in the operated position. A bolt 35 is fixed into the plunger 34 and has a protruding head 36 extending downwardly below the bottom of said plunger and travels within a yoke 37. When the plunger 34 travels upwardly the bolt 36 likewise continues upwardly within yoke 37. When linkage is taken up in yoke 37 valve 38 will follow upwardly and expose an opening 39 of the chamber 40 leading into the manifold 32.

In use let us assume that the driver is using a speed of some 30 miles per hour and desires to take his foot off the accelerator pedal 52 and slow down. Ordinarily this operation would create a high vacuum in the manifold which would cause a sucking of gas into the manifold and thence into the motor which would result in great waste.

In my structure instead of this gas going into the manifold, when the operator takes his foot off the accelerator, air instead of gas is admitted into the manifold. The contact springs 20 are closed so that the circuit is prepared for contact 31 to complete the secondary circuit and the operation of vacuum unit 33 completes said circuit and actuates the solenoid so as to raise the plunger 34 and the valve 38 to permit air coming in through ports 41 into my chamber 40 connecting with the manifold.

In use it is also apparent that as soon as the foot of the operator again moves the accelerator that the contact springs 20 will be automatically operated and the circuit to the solenoid 27 will be broken restoring valve 38 to normal closed position, whereupon gas will be fed from the carburetor to the motor. On the other hand as an added safety feature, if the operator does not touch the accelerator or the clutch, air continues to be drawn into the motor, so that in time it will die. This is important where the operator is suddenly incapacitated, and will result in saving of life and property.

It will be further noted that the vacuum unit 33 is preferably encased for protection in keeping contacts clean and workable. Said casing 42 comprises a plate 43 secured to coupling 44 by means of screws 45 and having at its outer end a ring 46 suitably secured thereto, and housing or cover member 47 which will slip over said ring 46. In the wall of said housing 47 is a slot 48 to slip over hollow nipple 49. The nipple 49 and the coupling 44 are screw threaded for engagement, and the coupling 44 has a port 50 in communication with the chamber 40. Vacuum tube 51 of vacuum unit 33 is secured to the outer end of nipple 49 by means of solder or the like.

Having thus described my invention, I claim:

1. In combination with an internal combustion engine and an electrical source of supply, a fuel

saving device adapted to be attached to the manifold of said internal combustion engine comprising a wire leading from the electrical source of supply to a set of contact springs adapted to close when the clutch pedal of the internal combustion engine is in clutch engaged position, a wire leading from said set of contact springs to a second set of contact springs indirectly attached to and insulated from the carburetor of the internal combustion engine, an adjustable stop on the accelerator rod of the internal combustion engine for closing said second set of contact springs when the accelerator rod is in released position, a solenoid, a wire leading from the second set of contact springs to the side of said solenoid so that electrical current may pass through the solenoid to the other side thereof to a locking contact spring, a wire leading from said contact spring to a contact screw, a chamber communicating with the manifold of the internal combustion engine and having an opening, the casing of said fuel saving device having a plurality of ports for admitting air into the opening of said chamber, a valve adapted to fit down into and normally close the opening of said chamber, a plunger connected to said valve, a vacuum unit placed to make contact with said contact screw to complete the circuit, so that upon an operator of the internal combustion engine removing pressure on the accelerator pedal a high vacuum is created in the manifold causing the vacuum unit to complete the circuit by contact with said contact screw, and thereby energizing the solenoid so that the locking contact spring makes contact with the plunger to establish a secondary circuit and raise the plunger and its attached valve off the opening of the chamber thereby admitting air instead of gas into said chamber and thence into the manifold, but upon the operator of the internal combustion engine again applying pressure to the accelerator, the contacts will be broken, permitting the plunger to fall so that the valve closes the opening of the chamber against the admission of further air.

2. In combination with an internal combustion engine and an electrical source of supply, a fuel saving device adapted to be attached to the manifold of said internal combustion engine comprising an air intake structure having a plurality of air inlet ports and a chamber communicating with said manifold, said chamber having an opening, a valve controlling said opening so as to allow or prevent the admission of air therein, means adapted to move said valve to close said opening when the accelerator of the internal combustion engine is actuated, and to expose said opening when the accelerator is released, including a solenoid operatively connected with said valve, an electric circuit adapted to energize said solenoid, and a vacuum unit adapted upon the creation of a high vacuum caused by the release of the accelerator to contact said solenoid through electrical conductors and actuate the solenoid to open the valve, until pressure again applied on the accelerator breaks the circuit and returns the valve to closed position.

3. In combination with an internal combustion engine and an electrical source of supply, a fuel saving device adapted to be attached to the manifold of said internal combustion engine comprising an air intake structure, a vacuum unit, a solenoid, said air intake structure having a plurality of air ports and a chamber communicating with the manifold of the internal

combustion engine, a valve adapted to normally close said chamber, and prevent the admission of air therein, said valve connected to a plunger, an electrical conductor connecting the electrical source of supply with the solenoid and thence to a contact screw adjacent the vacuum unit, so that upon the operator removing pressure from the accelerator a high vacuum is created and causes the vacuum unit to make contact with the contact screw and complete the circuit and energize the solenoid thereby causing it to raise the plunger and carry the valve off the chamber and cause air to pass into the chamber and thence into the internal combustion engine, a locking contact spring attached adjacent the solenoid and insulated therefrom, said valve being held above the chamber by the solenoid being locked in operated position by the locking contact spring until the operator resumes pressure upon the accelerator thereby breaking the circuit, de-energizing the solenoid and causing the plunger to fall and the valve to close the chamber and preventing the admission of air therein and thence into the internal combustion engine.

4. In combination with an internal combustion engine and an electrical source of supply, a fuel saving device adapted to be attached to the manifold of said internal combustion engine comprising an air intake structure having a plurality of air inlet ports and a chamber communicating with said manifold, said chamber having an opening, a valve controlling said opening so as to allow or prevent the admission of air therein, said valve attached to a plunger, means adapted to move said valve to close said opening when the accelerator of the internal combustion engine is actuated, and to expose said opening when the accelerator is released, including a solenoid operatively connected with said plunger, an electric circuit adapted to energize said solenoid, and a vacuum unit adapted upon the creation of a high vacuum caused by the release of the accelerator to contact said solenoid through electrical conductors and actuate the solenoid to instantly actuate said plunger to open the valve until pressure again applied on the accelerator breaks the contact and instantly lowers the plunger and returns the valve to closed position.

5. In combination with an internal combustion engine and an electrical source of supply, a fuel saving device adapted to be attached to the manifold of said internal combustion engine comprising an air intake structure having a plurality of air inlet ports and a chamber communicating with said manifold, said chamber having an opening, a valve controlling said opening so as to allow or prevent the admission of air therein, said valve attached to a plunger, means adapted to move said valve to close said opening when the accelerator of the internal combustion engine is actuated, and to expose said opening when the accelerator is released, including a solenoid operatively connected with said plunger, an electric circuit adapted to energize said solenoid, and a vacuum unit adapted upon the creation of a high vacuum caused by the sudden release of the accelerator to contact said solenoid to instantly actuate said plunger to open the valve, said device constructed so that a gradual release of the accelerator will not create a high vacuum so as to operate the vacuum unit and open said valve.

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