Sept. 8, 1953 W. W. MATHEWS 2,651,262

CONTROL DEVICE

Filed Feb. 2, 1950

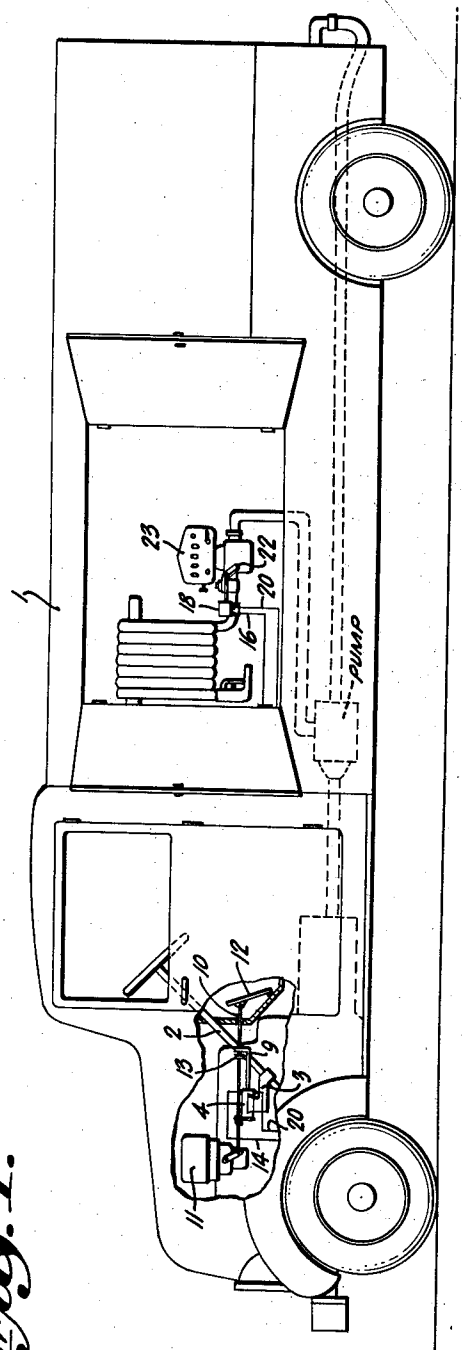


Fig. 1.

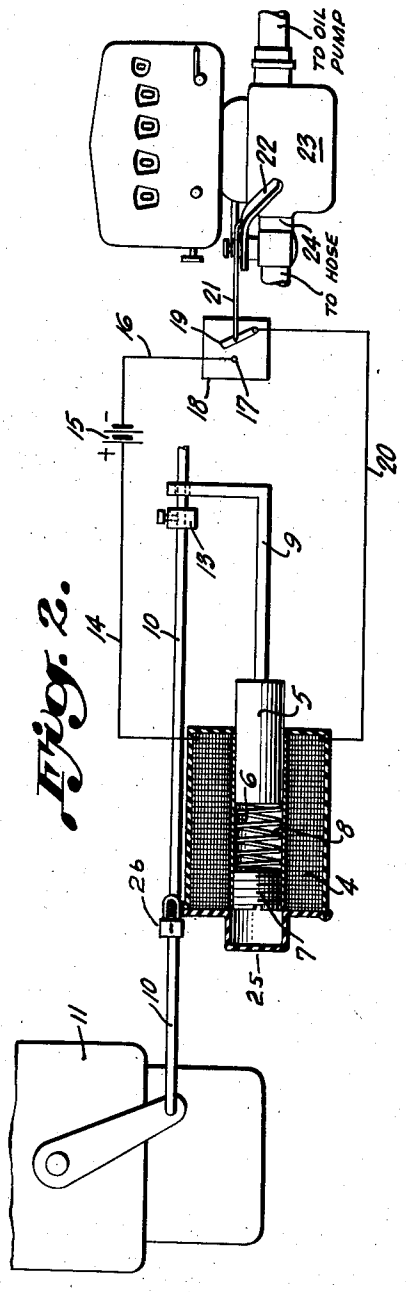


Fig. 2.

INVENTOR.
WILLIAM W. MATHEWS
BY R. Houston Burt

ATTORNEY

Patented Sept. 8, 1953

2,651,262

UNITED STATES PATENT OFFICE

2,651,262

CONTROL DEVICE

William Watt Mathews, Richmond, Va.

Application February 2, 1950, Serial No. 142,031

2 Claims. (Cl. 103—13)

1

This invention relates to a control device and more particularly to such a device used in connection with an internal combustion engine working in conjunction with a pump.

One of the most important uses to which the invention is adapted is in connection with the oil tank truck. The usual tank truck at the present time is equipped with an oil pump which is in operative relation with the automobile tank truck engine. These pumps are made by various manufacturers, and consequently their maximum efficiency in terms of revolutions per minute varies. One pump may have a maximum efficiency of 500 R. P. M. while another may be at its peak at 400 R. P. M.

With such a variety of pumps, naturally the motor engine must be made to synchronize with the pump used in connection therewith to produce its maximum efficiency. In tank trucks today this is not done. For instance, the operator of such a truck will throw the pump in gear with the engine (which is generally idling when truck is stopped) and then pull the throttle to speed "up" the engine, and with such a manual operation it is almost impossible to obtain the maximum efficiency of the pump, and the automobile engine is generally accelerated far beyond the necessary speed required to efficiently operate the pump. In other words, there can be no automatic positive synchronization of the engine and pump; since the engine is accelerated or operated by manual control.

This invention overcomes the foregoing disadvantages, and one of the objects is the provision of a device which synchronizes the engine and oil pump to produce their respective maximum efficiencies.

Another object of this invention is the provision of a device for automatically causing an engine and pump to operate at their respective maximum efficiency.

Other objects and features will more fully appear from the following description and accompanying drawings in which:

Fig. 1 is a view in side elevation with portions broken away and partly in section of a tank truck with the invention applied thereto, and

Fig. 2 a diagrammatic view of the invention in the electrical circuit.

Referring to the drawings, a tank truck 1 has connected to its steering wheel post 2 a bracket 3 which firmly secures a solenoid 4 to said post. The solenoid is provided with a plunger 5 which is movable in chamber 6. An adjustable set screw 7 is mounted in threadable fashion in one end of the solenoid and has a spring 8 secured

2

thereto which will be more fully explained hereinafter.

The plunger 5 has an extension 9 projecting therefrom and its end is slidably mounted upon an accelerator rod 10, one end of which is connected to a carburetor 11, and the other end to a pedal 12. A lock nut or adjustable stop 13 is secured to rod 10 while extension 9 has its end slidably mounted on said rod in spaced relation to said nut or stop. A wire 14 of the solenoid connects one side of a battery 15, while one end of a wire 16 connects the other side of a battery and its other end connects a contact 17 in a switch box 18. A switch blade 19 is pivotally mounted in said switchbox 18 and connects with a wire 20 of the solenoid.

The switch is moved into and out of engagement with contact 17 by a link 21 which connects with said switch blade and a handle 22 of an oil control or check valve 23 connecting a pipe 24. When set screw 7 has been adjusted so as to move the plunger to a desired position that will cause the engine to maintain a constant speed and produce maximum efficiency of the pump, a cover 25 is pivotally connected to one end of the solenoid and secured thereto by a lock 26 so as to prevent the operator from tampering with such adjustment.

The device functions as follows:

When the tank truck is stopped or parked and ready for the delivery of oil or any liquid, the engine, as a general rule, is idling; the pump is then thrown in gear with the engine by an operator. The operator then moves the handle 22, pivotally mounted on a rigid or fixed pipe 24 adjacent the check valve 23, clockwise to close the switch. When this is done blade or member 19 engages contact 17, which closes the electrical circuit and energizes the solenoid thus causing the plunger to move into the chamber. The plunger moves extension 9 and its end engages nut 13 thereby forcing the accelerator rod to move so as to cause the carburetor to feed more fuel thereby increasing the speed of the automobile engine which increases the speed of the fuel pump. When handle 22 is moved counterclockwise to open the switch, the blade 19 moves out of engagement with contact 17 and spring 8 forces the plunger a sufficient distance out of chamber 6 so as to move the end of extension 9 out of physical contact with the nut 13, thereby providing for the retarding of the operation of the engine. The pump is now thrown out of gear with the engine and the flow of fuel to the customer's fuel tank is stopped.

In this invention there is no direct control of

the valve (check valve) the control is indirect, since, the amount of opening of the check valve depends on the pump and the speed of the pump. Ordinarily, the check valve will open wider or more fully at high speed of the pump than when the pump is operated at a lower speed.

In this invention the conduit is partly rigid and partly flexible and includes the pipes leading to and from the pump, the meter, the pump, the check valve and a pipe leading to and including the flexible hose, and the rigid nozzle with or without a trigger valve.

By adjusting the set screw 7 to the proper position the plunger and extension may be made to move the accelerator any desired distance and cause the automobile engine to operate the fuel pump at its maximum efficiency. It is obvious that when such pre-adjustment is made then all that is necessary is to throw the fuel pump in gear with the idling engine, open the fuel valve and the engine and pump will operate at maximum efficiency; thereby eliminating excessive speed of motor and haphazard pumping.

Having described the invention, what is claimed is:

1. In a device of the character described; comprising the combination of an automobile engine geared to a fuel dispensing pump, said pump being interposed in a fuel supply conduit, of a battery, a solenoid secured to said automobile; a carburetor on said engine; an accelerator rod connecting said carburetor in operative relation with a pedal in said automobile, a lock nut adjustably mounted on said rod and constituting a stop located in the path of movable means actuated by said solenoid, said movable means comprising an extension having one of its ends slidably embracing said rod adjacent said nut, the other end of said extension being secured to the plunger of said solenoid, a check valve located in said conduit to normally prevent backward flow of said fuel in said conduit, a switch supported on said conduit, said switch comprising a stationary contact and a movable contact member, switch operating means mounted on said conduit for manually operating said member, said switch being in an electrical circuit with the battery and said solenoid, whereby manual operation of said switch member will actuate the solenoid and its extension to increase the speed of the engine, the dispensing pump as well as the flow of fuel through said conduit and its check valve, substantially as described.

2. The construction set forth in claim 1 in which said switch operating means comprises a lever pivoted on a rigid portion of the conduit adjacent said movable switch member, said movable member being connected by a link to said lever, said lever having a handle whereby it may be manually operated to open and close the switch.

WILLIAM WATT MATHEWS.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,820,272	Gumpper	Aug. 25, 1931
2,230,335	Smith	Feb. 4, 1941
2,259,656	Neumann	Oct. 21, 1941