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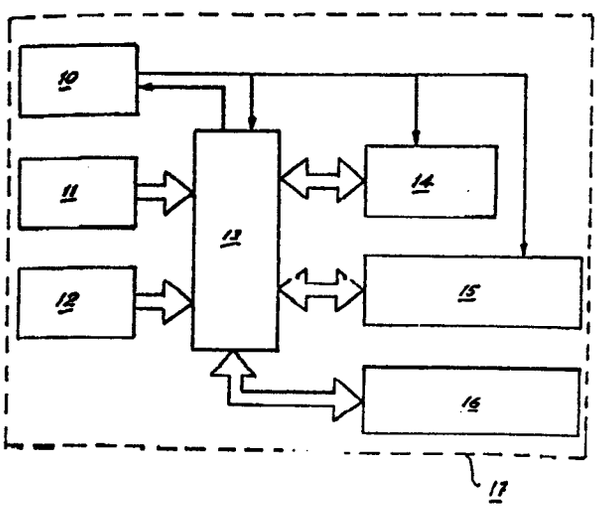
(71) Applicant: **MECANISMOS AUXILIARES INDUSTRIALES S.A. M.A.I.S.A.**
Passeig de l'Estacio, 14
Valls Tarragona(ES)

(72) Inventor: **Blasi Darner, Alexandre**
Passeig de l'Estació, 14
Valls (Tarragona)(ES)

(74) Representative: **Lorenz, Wilhelm**
Hubertusstrasse 83 1/2
D-8035 Gauting(DE)

(54) An improved central control unit for injection engine-powered vehicles and operating system therefor.

(57) The central control unit (17) according to the present invention consists of a supply unit (10), a sensor input unit (11), a keyboard (12), a microcomputer (13), a display and alarm unit (14), a storage and timer unit (15), and a supplementary unit (16) whose operation, by interaction among the foregoing units, supplies the driver of the vehicle information on the distance travelled, current and average speed, consumption data a.s.o., the keyboard (12) being used to select the data that are to be displayed.



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An Improved Central control Unit for Injection Engine-Powered Vehicles and Operating System Therefor

This Patent of Invention, as indicated by its title,relates to "AN IMPROVED CENTRAL CONTROL UNIT FOR INJECTION ENGINE-POWERED VEHICLES AND OPERATING SYSTEM THEREFOR".

The automotive industry and especially the heavy transport vehicle industry make use of high-power driving units whereby any irregularity that may give rise to a breakdown may be the cause of serious harm to both the load carried and the vehicle itself, and for this reason the drivers of such vehicles, in the aim of preventing such irregularities, require information on and control of the operation of all systems, of the driving unit and of the vehicle itself.

Such information and control must be specific and concentrated in a single point since the driver of the vehicle cannot take his attention away from the road. In order to assist the driver and protect the good operation of all the systems of the vehicle, the central control unit that is the object of this Patent of invention has been created.

The incorporation of the central control unit in the vehicle entails the supply of selective information, at the discretion of the driver, on distance travelled, current speed, average speed, prior consumption, current consumption, average consumption, distance before next maintenance, consumption before next maintenance, maintenance performed and pending performance, recommended optimum engine speed, clock, alarm and calendar.

This central control unit is composed of a supply unit, a sensor input unit, a function selector keyboard, a microcomputer, a display and alarm unit, a storage and timer unit, and a supplementary unit.

During normal operation of the central control unit, the supply unit, which is protected against electrical interferences, transforms the voltage from the battery of the vehicle to the voltage required to energize the microcomputer. This unit is automatically connected and disconnected thanks to the programming of the microcomputer or to the signal from the ignition key. It constantly supplies the storage and timer unit in the same way in order to prevent loss of the stored data, even without the ignition key and even without battery in the vehicle, and in order to keep the clock on time and the calendar up to date.

In addition to supplying electric power to the storage and timer unit and to the microcomputer, it also supplies the display and alarm unit, which features the conventional components to allow display of all data and alarms.

The arrangement of the central control unit and its operation are as follows: the sensors, which are connected to different points of the vehicle, send the respective signals to the sensor input unit so that they may be interpreted by the microcomputer.

The parameters measured by the sensors are: input and return volume of injection pump, distance travelled by wheels, engine rpm, accelerator position.

The storage and timer unit provides protection against loss, due to failure of electric power supply, of the most significant data that one wishes to maintain from one start-up to another. It also provides the data on current time and calendar date, and starts up the system, in the case of disconnection, when the time on the alarm concurs with that on the clock, as long as the alarm is activated. It also provides a signal of good operation to supply the supplementary unit.

The function of the supplementary unit is to protect the good operation of the other units, picking up data from them, and in the case of a breakdown of any of the component assemblies of the central control unit, this supplementary unit is activated and informs the microcomputer.

The microcomputer is the real intelligent unit of the system, interpreting the input signals from both the sensors and the keyboard, providing as a result, depending on the program and on the calculating process, the value of the variable desired by the user, sending the respective signal to the display and alarm unit. The microcomputer has the capacity to itemize and interpret the distance travelled as a total or partial sum, the prior consumption in the same way, the current consumption in liters/hour or in liters/100 km.

Other details and features of this Patent will be pointed out in the course of the description that follows, in which reference is made to the drawings that are attached to this Specification, which represent the main details in a somewhat schematic way. These details are given for indicative purposes and refer to a possible case of practical embodiment, but the Patent is not limited to the details set out therein; therefore, this description shall be considered from an illustrative standpoint, without limitations of any type.

Figure no.1 is a schematic diagram of the central control unit with its component units and the way in which they are connected.

The central control unit (17) is composed of these units: supply unit (10) of the microcomputer (13), sensor input (11), keyboard (12), display and alarm (14), storage and timer (15) and supplementary unit (16). All the sensors coupled to the different systems of the vehicle are connected to the central control unit (17) and, more specifically, to the sensor input unit (11).

In order for the central control unit (17) to operate, it requires the power supplied by the supply unit (10) to the microcomputer (13), and to the display and alarm unit (14) and the storage and timer unit (15).

The microcomputer (13) receives the signals picked up by the sensors through (11) and analyses them on the basis of the internal program, performing calculation processes in the required cases, then sending the signal to (14), which displays the parameter detected by the sensors.

Analogously, (13) can be activated by the user of the vehicle through the transfer unit (12) so that (14) will immediately display the respective functions such as distance travelled, both total and partial, prior consumption in the same way, current consumption in liters/hour or in liters/100 km, current speed, average speed, distance before next maintenance, consumption before next maintenance, information on maintenance performed and pending performance, recommended optimum engine speed, clock, alarm and calendar.

In the case that (10) were to break down and - (13) were to be left without supply of the power required for its operation, (15) stores the most significant data to prevent them from being cleared, supplying data to (14) on the time and date, starting up the central control unit (17) 6hen it is disconnected and the alarm is activated.

As protection of the whole of the central control unit (17), there is the supplementary unit (16) which acts in the case of external interference, or in the case of malfunctioning of the other component units of the central control unit, storing the pertinent data.

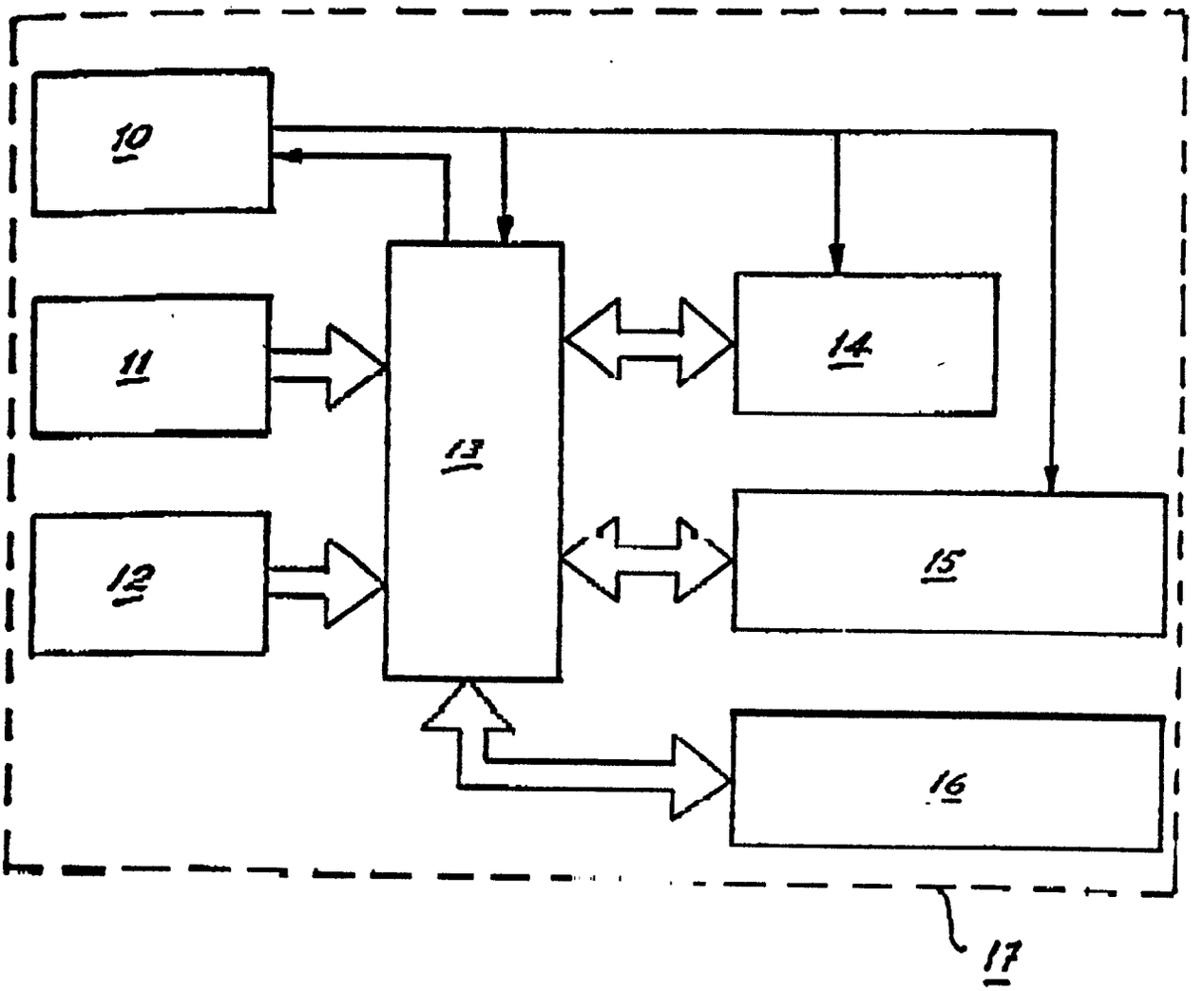
As may be observed from the foregoing description, the central control unit specified by this Patent of Invention is extremely simple and, at the same time, efficient, which are factors of importance as concerns the safety of both the vehicle and the driver.

Now that the object of this Patent has been sufficiently described in connection with the attached drawings, it may be understood that any modifications of detail as deemed appropriate may be made, as long as the essence of the Patent, as summarized in the following CLAIMS, were not to be altered.

Claims

1. "AN IMPROVED CENTRAL CONTROL UNIT FOR INJECTION ENGINGE-POWERED VEHICLE AND OPERATING SYSTEM THEREFOR", characterized in that said central control unit (17) is composed of a supply unit (10), a sensor input unit (11), a keyboard (12), a microcomputer (13), a display and alarm unit (14), a storage and timer unit (15), and a supplementary unit (16) whose operation, by interaction among the foregoing units, supplies the driver of the vehicle to which the central control unit has been incorporated, information on the distance travelled, current speed, average speed, prior consumption, current consumption, average consumption, distance and consumption before next maintenance, information on maintenance performed and pending performance, recommended optimum engine speed, clock, alarm and calendar.

2. "AN IMPROVED CENTRAL CONTROL UNIT FOR INJECTION ENGINE-POWERED VEHICLES AND OPERATING SYSTEM THEREFOR", as claimed in Claim 1, characterized in that its operating system is as follows: the microcomputer (13), the display and alarm unit (14) and the storage and timer unit are activated by the power received from (10), and (13) picks up the signals sent by (11) through the sensors installed in the vehicle and, through the programming of the microcomputer - (13), it carries out the required calculations, displaying the data obtained in (14), with the keyboard (12) being used to select the data that are to be displayed.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