

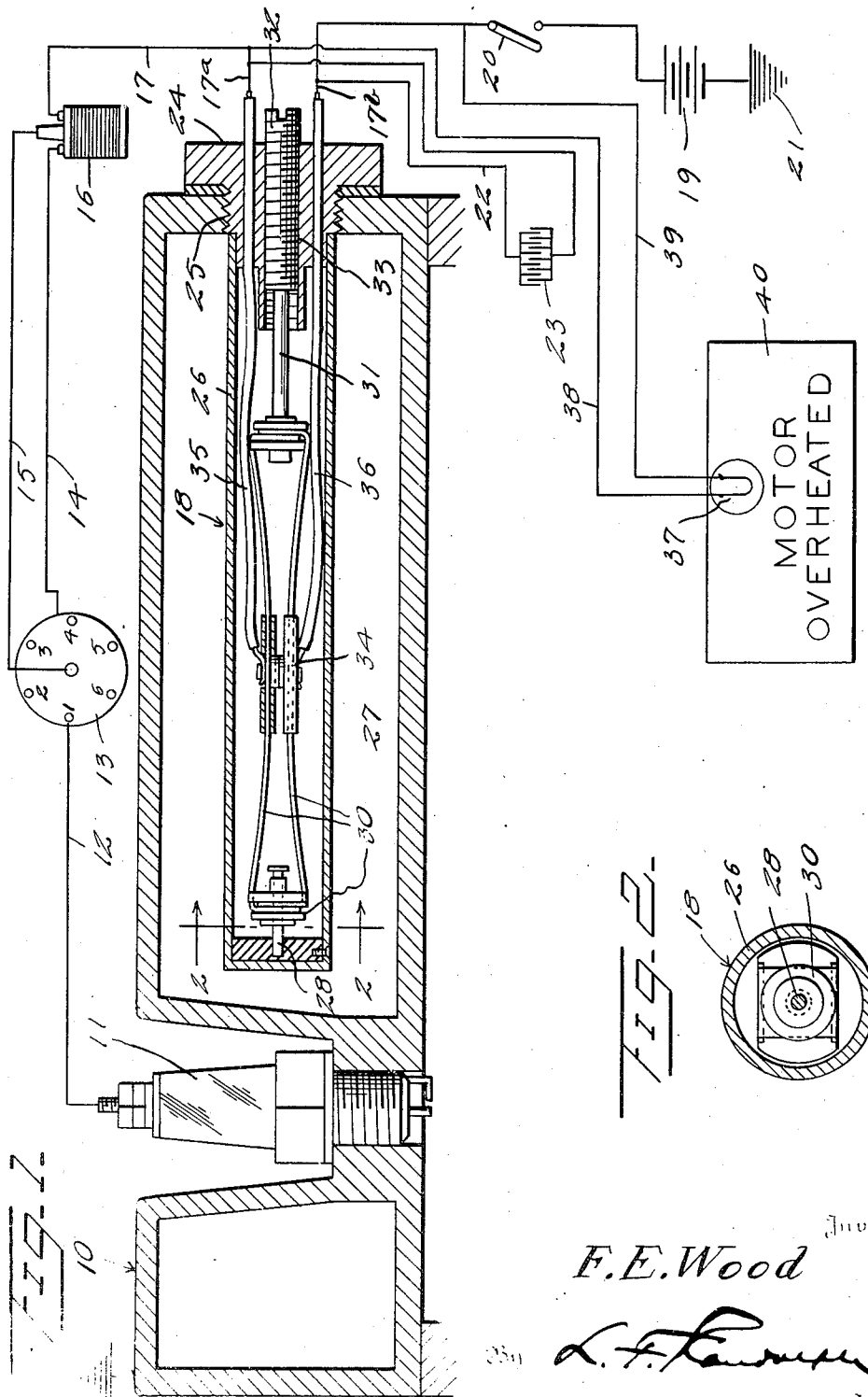
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MOTOR IGNITION CONTROL

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MOTOR IGNITION CONTROL

Fremont E. Wood, Gabbs Valley, Nev.

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1 Claim. (Cl. 177—311)

This invention relates to a control for motors, particularly internal combustion engines, and is designed automatically to stop or cut out the ignition in the event of overheating from various causes and particularly from the lack of water, the invention being applicable in connection with propelling engines of automobiles, trucks, tractors, aircraft, vessels, stationary engines, and generally.

It is particularly aimed to incorporate into the ignition circuit, by shunt means, a switch mechanism which automatically will open through the condition of overheating and which preferably at the same time visually will indicate such a condition.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawing illustrating an operative embodiment.

In said drawing:

Figure 1 is a view illustrating the invention, particularly in diagram, but in part being vertical section; and

Figure 2 is a cross-section taken on the line 2—2 of Figure 1.

Referring specifically to said drawing, wherein like reference characters designate like or similar parts, a fragment of an internal combustion engine is conventionally shown at 10 the fragment being specifically the cylinder head. It is to be understood that such a showing or suggestion is to be taken as conventional since the engine or motor may be of the type employed for any desired purpose. One of the spark plugs is shown at 11, the same being of conventional type, and through a conductor 12 being operatively connected to a conventional distributor 13 with which, through conductors 14 and 15, the conventional ignition coil 16 is operatively associated. It will be clear of course that all spark plugs of the internal combustion engine are operatively connected to the distributor 13 and ignition coil 16, but that they have been omitted for the sake of clarity.

A conductor 17 leads from the ignition coil and has branches 17a and 17b connected to a bi-metallic thermostatic switch generally designated 18. Such branch 17b connects directly with the starting, lighting, and ignition battery 19 of the vehicle, and included therein is the conventional key-operable ignition switch 20. It will be clear that one pole of the battery 19 as usual is grounded at 21 to the frame of the vehicle and the motor or engine part 10.

Preferably connected across the branch conductors 17a and 17b is a conductor 22 which includes a condenser at 23.

More specifically, the bi-metallic thermostatic switch 18 preferably includes a plug at 24 which is detachably screw-threaded at 25 in a hole in the cylinder head 10. Plug 24 carries a closed tube 26 of brass or other metal which will expand and particularly elongate upon being heated. It will be noted that the inner end of the tube or shell 26 is free for this purpose. Such tube or shell is disposed directly in the space or water jacket 27 of the cylinder head 10 in order to be in contact with and subject to the temperature of the water in such jacket.

Within the shell 26 a pin 28 is anchored at one end and has a pair of fingers 30 of any suitable thermally inert metal fastened thereto. The other ends of such fingers 30 are fastened to a stud 31 carried by an adjusting screw 32, screw-threaded into plug 24 as at 33.

A pair of normally engaged contact points 34 are carried by but insulated from the fingers 30, and the branch conductor 17a extends through the plug 24 and is connected to one of them, while the branch conductor 17b extends through the plug and is connected to the other of them. Such portions of the conductors 17a and 17b which extend through the plug 24 and into the tube or shell 26 are covered with insulation as at 35 and 36 respectively.

A visual signal in the form of a lamp 37, for instance, is shunted into the ignition circuit as by connecting conductors 38 and 39 to the conductors 17a and 17b. Preferably the lamp 37 is disposed behind a translucent or transparent sign 40, or adjacent to an equivalent sign, which will indicate the fact that the motor has overheated, when the lamp is illuminated, and which sign preferably is disposed on the dash or instrument board of the vehicle equipped with the motor. It is clear of course that in lieu of a visual signal, an audible signal or both may be used.

In the normal operation of the motor, with switch 20 closed, the contacts 34 also will be closed and they will remain closed during a safe range of temperatures for operation of the motor. In the event of overheating, that is, heating above a predetermined desired or safe temperature the shell or tube 26 will inwardly elongate, thereby straightening the fingers 30 and separating the contact points 34, thereby permitting electric current to flow in the shunt conductors 38—39, illuminating the signal 37. This action not only indicates to the driver or party in control of the

motor that the motor is overheated, but it also introduces so much resistance into the circuit that the ignition coil will not function with the amount of current flowing through it. When the condition is remedied, and the parts are sufficiently cooled, the thermostatic switch automatically will close through the re-engagement of the contact points 34, the lamp 37 becoming extinct due to the resistance and to the fact that the current will flow through the contact points which will offer less resistance.

I prefer to use a type of thermostatic switch like that disclosed, since it will be accurate in operation, although changes may be made within the spirit and scope of the invention as defined by appended claim.

Although I have disclosed the thermostatic switch as located within the water jacket and subject to contact with the water therein, this

is to be taken as by way of example only, since the thermostatic switch may be located or mounted at any advantageous point, to be subject to the heat developed by the engine.

I claim as my invention:

In the ignition circuit of an internal combustion engine including an ignition coil, a thermostatic means subject to the temperature of the coolant of the engine, a switch in said circuit normally closed below a predetermined temperature, said switch being connected to said thermostatic means for opening through expansion of the thermostatic means, and signal means shunted in said circuit for actuation through opening of said switch for the dual purpose of signaling and imposing resistance to render the ignition coil of the circuit ineffective at and above said predetermined temperature.

FREMONT E. WOOD.