Objects of the invention

[0012] The object of the present invention is to produce a device capable of measuring effective and cyclic rates of fire of a weapon by means of a passive electrical network requiring no supply of power other than that supplied by firing.

[0013] By virtue of the device of the invention, it will be possible to calculate the cyclic and effective rates of fire without the need for an external power supply such as for example a cell or a battery.

[0014] Such a device according to the invention allows the weapon to be monitored continuously and ensures the efficiency, longevity and safety thereof through improved maintenance. Specifically, this device makes it possible to assess the heating of the barrel and of other parts of the weapon and hence to check the state of wear thereof by calculating the effective rate of fire of the weapon.

Summary of the invention

[0015] The present invention relates to a device for measuring the effective and/or cycle rate of fire for any type of weapon, in particular a firearm, comprising:

- a self-powered system capable of recovering energy from firing;
- at least one RC accumulator network comprising a capacitor and a resistor in parallel;
- an element measuring the voltage across the terminals of the capacitor;
- an electronic device that is capable of calculating the cyclic rate of fire and/or the effective rate of fire on the basis of the value measured by the element for measuring the difference in potential;

the self-powered system charging the capacitor on each firing. In one embodiment, the cyclic or the effective rate of fire can be determined by the residual charge across the terminals of the capacitor when firing.

[0016] According to preferred embodiments of the invention, the device includes at least one or an appropriate combination of the following features:

- the self-powered device is configured so as either to inject a predetermined constant charge on each firing or to impose a constant difference in potential across the terminals of the capacitor on each firing;
- the time constant of the RC accumulator network is chosen to represent dynamics of the effective rate of fire or dynamics of the cyclic rate of fire;

- the voltage measurement element comprises an electronic device comprising optocouplers that are intended to measure the value of the difference in potential of the capacitor;
- the device of the invention comprises an electronic device for calculating the cyclic rate of fire and/or the effective rate of fire on the basis of the value measured by the element for measuring the difference in potential;
- the device of the invention comprises a storage memory making it possible, in use, to store the value of the difference in potential across the terminals of the capacitor during a later firing;
- the self-powered system comprises a shot counter.

[0017] The present invention also relates to a weapon including at least one measurement device such as described above.

[0018] According to one variant, the weapon is fitted with one device for measuring the effective rate of fire and with another device for measuring the cyclic rate of fire.

[0019] The present invention further relates to a method for measuring the effective and/or cyclic rate of fire for any type of weapon, comprising the following steps:

- recovering energy from firing;
- injecting a predetermined charge into the capacitor using said energy or applying a difference in potential to said capacitor using said energy;
- gradually discharging the capacitor through the resistor;
- measuring the difference in potential across the terminals of the capacitor during firing.

[0020] According to one preferred embodiment of the invention, the measurement method comprises an additional step of either calculating the cyclic rate of fire or of calculating the effective rate of fire on the basis of the difference in potential across the terminals of the capacitor.

[0021] Advantageously, the method of the invention comprises a step of recording the voltage across the terminals of the capacitor before it is recharged.