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Power bank Cum Women's Safety Device "SPARK"

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***Abstract:** In present scenario, women safety is an important concern. To achieve so, a portable safety device is designed which is called spark. It is as easy to carry as a small power bank. This device is normally used as a power bank to charge mobile phone and at the time of danger, it can be used as a safety device which gives an instant shock to the attacker without killing them.*
***Keywords:** Spark, safety device, safety weapon, portable women safety device and power bank.*

I. INTRODUCTION

In today's life women are not just the "home maker" they are working and are concerned about their growth & career as much as a man.

Women not only work as teacher or tailor anymore. The profession like engineer, doctor, manager etc. are very well handled by women.

As many women are working in day and night shift, the question of women security comes to each one's mind. There are many cases of rape, molestation, kidnapping etc. in the society. We cannot change the mentality of the people in a day but as already said 'prevention is better than cure', we as a society should think about the women's security.

Government is trying to stop these crimes through many rules and laws but we as an individual should also concern about providing women such an environment in which they can flourish.

Time to time, many apps and tool launched to prevent such crime, such a tool is 'Spark'. Spark is a self-defence device which gives instant shock to the attacker.

II. METHODOLOGY

The proposed device is specially designed for self-defence purpose and its work on the principle of stun gun. Spark is an electric shock weapon, it delivers an electric shock to the attacker by the help of two needles which are trigger from the power bank by the user, at the same time when these needles are touch the human body, due to that high voltage and low current electrical discharge from the needles, the recipient become inoperative. The recipient feels pain, and can be temporarily paralysed for some time. Spark is an excellent self-defence device that can be used in such situation when an immediate safety situation is requires in order to safe him/her from the attacker. This device is specially designed to handle these critical situation. The circuit diagram for the proposed smart glove is shown in fig.1 [5]. Table I shows details of various component including their range and function.

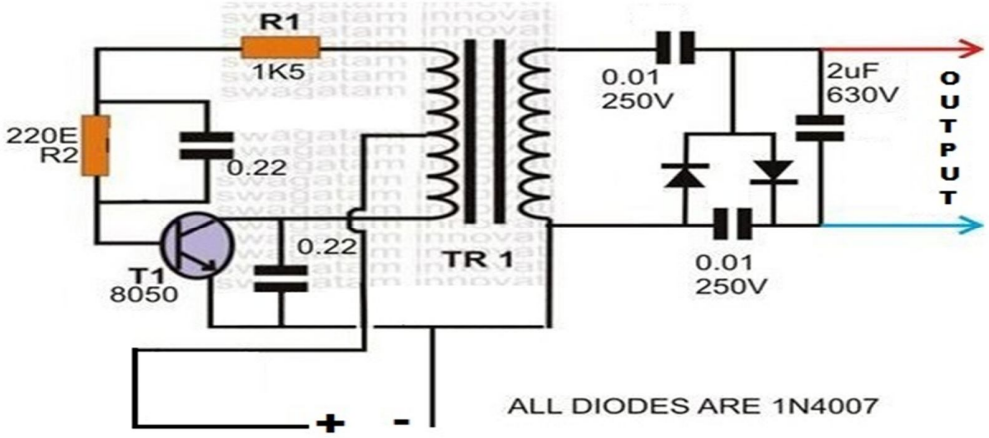

Fig.1.Circuit of electric shock device [5]

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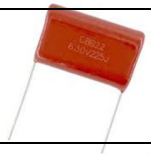
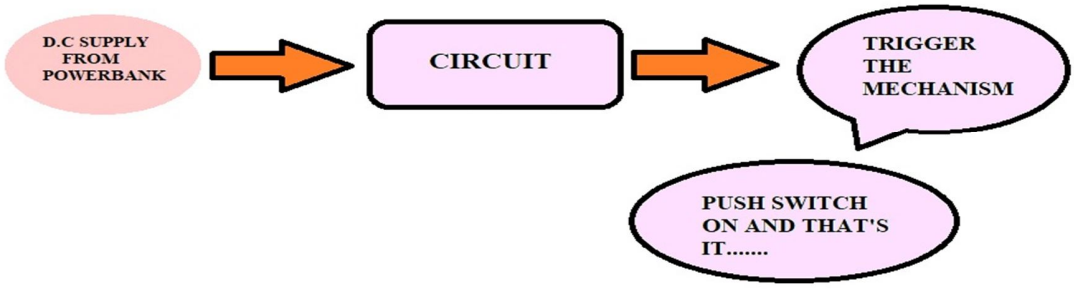
Table I

S. No.	Component	Image	Range	Quantity	Function	Reference No.
1.	Power bank		5v, 2.1amp	1	Providing power and space for triggering setup	[6]
2.	High voltage transformer		4KV,20Hz	1	Step up the voltage level	[7]
3.	Resistance		220 Ω	1	Voltage drop	[8]
4.	Transistor		S 8050	1	Amplify or switch electronic signals and electrical power. To flow of current in one direction	[8]
5.	Capacitor		0.22uf	2	Store the charge	[8]
			0.01uf	1		
			2uf 630v	1		
6.	Diode		1N4007	2	To flow of current in one direction	[8]

Spark working principle is very simple and can be explained using block diagram as shown below.



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Now we will come upon the device how it works, full setup of trigger mechanism is assembled upon the bottom of the power bank. First of all, the user slide the slider placed at the bottom due to that two needles are come from inside casing which are capable to pier the cloth but not to pier the skin just because of to restrict any medical infection, after that user just to push the red button placed at the top to switch on the circuit and shock is generated on needles.

In this device, a circuit is used to generate the high voltage which is a simple ordinary circuit formally used in mosquito bats, electric lighter to generate spark. This circuit includes a step-up transformer to achieve an alternating high-voltage discharge, resistance, diode, various capacitors etc. this circuit is powered by the battery of power bank itself therefore it does not require any other power source. The output voltage upon contact with the target will depend on various factors such as how much is the power bank charge. It still provide about 600v dc supply during full discharge of power bank and this voltage is vary accordingly with the voltage of the power bank. Electric shock device which is placed in the power bank is shown in fig.2. If someone will try to harass the user, the user will trigger the switch. As soon as the button is pressed, it forms a path and a shock is generated at the tip of the pins.

Fig.2.Electric shock device

The input supply given to the device is between 1.5 Volts to 5 Volts with 1 to 3 Amp. The output of the electric shock device is in the range of 100 V up to 2 kV, current intensity output is in the range of 100 to 500 mA, individual impulse duration is in the range of 10 to 100 µs (microseconds), frequency of impulse is in the range of 2 to 40 Hz, electrical charge delivered is in the range of 15 to 500 µC (micro coulombs), energy delivered is in the range of 0.9 to 10 J.

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III. FUTURE SCOPE

In future, continuous improvement can be done like, the use of inbuilt GPS tracking system so that whenever anybody push the trigger button an automatic GPS location can be send to nearer police station, make this device hidden inside the power bank so that no anyone use this without user permission (specially small children's), make this device fully waterproof and lightweight.

IV. CONCLUSION

After completing the research work on it we came to the conclusion that the proposed power bank cum safety device, as a weapon is designed successfully for the protection of women's from attackers. This is compact, light in weight and can easily be carried. The components used in this project are easily available and very economical. The overall cost of this setup is around 300 INR and depends upon the capacity of power bank a user want to buy. This device gives the shock to the attackers without killing them. The intensity of the shock is up to 2KV.

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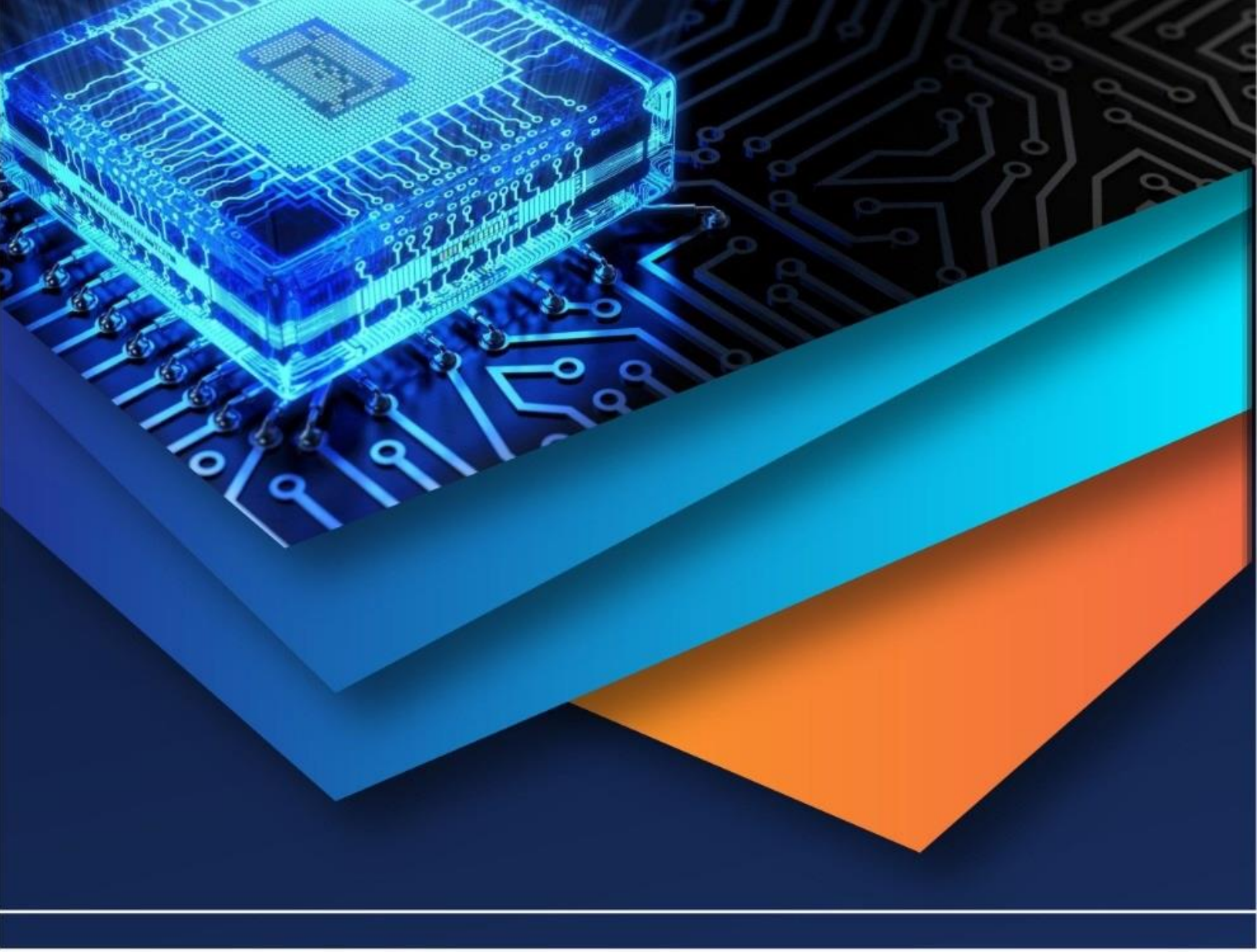

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