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# Smart Glove for Women Security

Sunny Deval<sup>1</sup>, Tanuj Maglani<sup>2</sup>, Imran Khan<sup>3</sup>

<sup>1, 2, 3</sup> Department of Electrical Engineering, YIT, Jaipur, Rajasthan, India

**Abstract:** Safety of women in present scenario is very important. Therefore, a compatible safety device is designed. This compatible safety device is named as smart glove which is easy to carry and easy to use. This smart glove will give the shock to the attacker without killing him.

**Keywords:** Smart glove, glove weapon, electroshocks weapon, women safety device and compact safety device.

## I. INTRODUCTION

In today's scenario, the personal safety has become an issue of importance for everyone, especially for women. Now days, women are working independently to support their family. They have to work till late night in IT firms, BPO, call centres etc. For such women, safety is the most important requirement because the cases of harassment and rapes are increasing [1]. Safety in today's society is essential for everyone, regardless of who it is. Smart gloves are a good option for providing safety in this case. Smart glove is a portable device which is easy to carry and use. It is an electrical self-defence device that uses high voltage to stop an attacker.

## II. METHODOLOGY

The proposed smart glove is designed for safety purpose and its design is based on electric shock technology. Smart glove is an electroshock weapon. It delivers an electric shock aimed at temporarily disrupting muscle functions and inflicting pain without causing significant injury [2]. Electric shock glove uses a temporary high-voltage, low-current electrical discharge to override the muscle-triggering mechanisms [3]. The recipient is immobilized via two metal probes connected to the electric shock device. The recipient feels pain, and can be momentarily paralyzed while an electric current is being applied to him/her [4].

Smart glove is an excellent, safe device that can be used in situations where an immediate safety situation requires quick action in order to neutralize an attacker. This device is perfect for such a situation [5]. In electric shock device circuit, the concept of mosquito bat is used [1]. The circuit diagram for the proposed smart glove is shown in fig.1. Table I shows details of various component including their range and function.

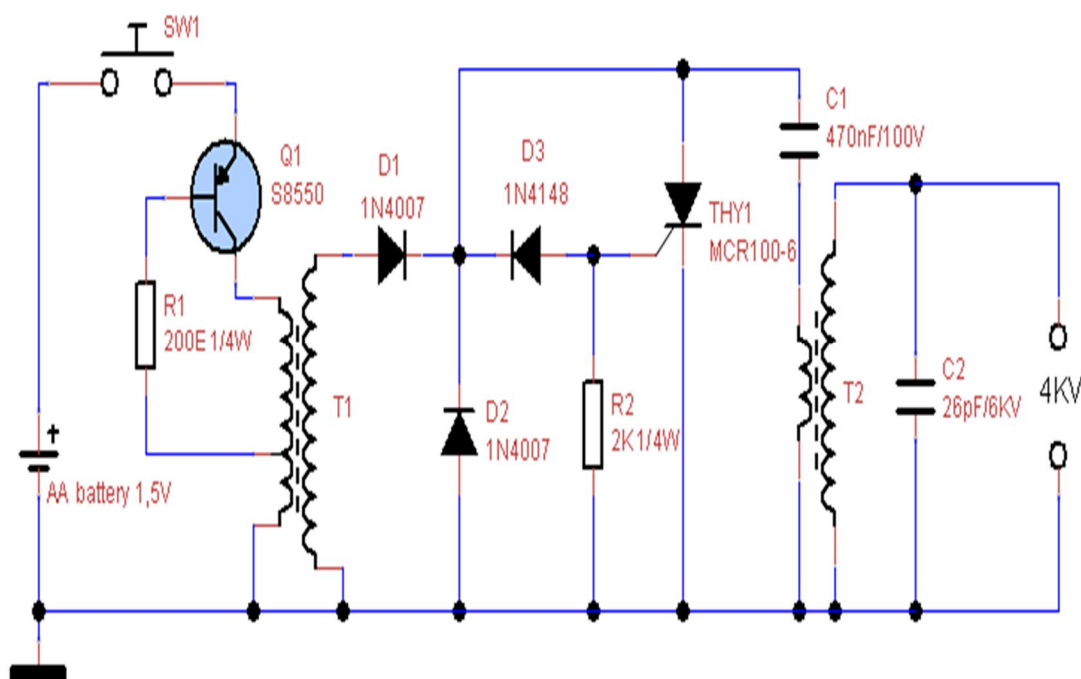

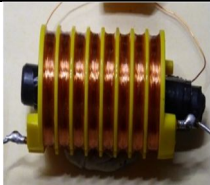
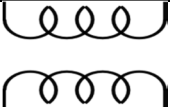





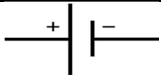
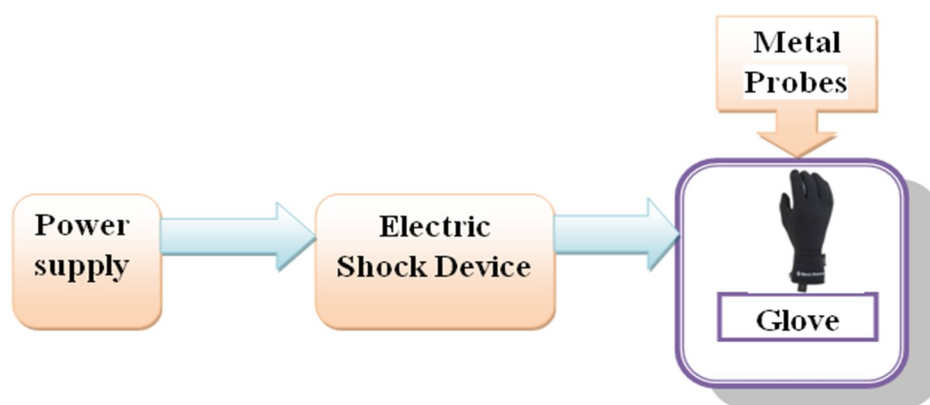


Fig.1.Circuit of electric shock device [6]

TABLE I

S. No.	Component	Image	Range	Quantity	Function	Reference No.
1.	Glove		-	1	To protect the hand during operation	-
2.	High voltage transformer		4KV, 20Hz	1	Step up the voltage level	6
3.	Blocking oscillator coil		12V	1	Step up the voltage level	6
4.	Resistance		200Ω, 2K	1	Voltage drop	6
5.	Thyristor		MCR 100-6	1	Controlling or switching power	7
6.	Diode		1N4148 & 1N4007	1	To flow of current in one direction	8
7.	Transistor		S8550	1	Amplify or switch electronic signals and electrical power.	9
8.	Capacitor		470nf, 100V & 26pf, 6KV	1	Store the charge	10
9.	AA Battery		1.5V	1	Provide the power to device	-

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





Electric shock device is fixed into the glove. Whenever the push button is triggered the shock generated on to the tip of the glove. In electric shock device, circuit the concept of mosquito bat is used [1]. The internal circuits of electric shock device includes an oscillator, resonant circuit (a power inverter), and step-up transformer to achieve an alternating high-voltage discharge. It may be powered by one or more batteries. The output current upon contact with the target will depend on various factors such as target's resistance, skin type, moisture, bodily salinity, clothing, the electric shock weapon's internal circuitry, discharge waveform, and battery conditions [11-12]. Electric shock device which is placed in the glove is shown in fig.2. The remaining circuit is placed in a box. If someone will try to harass the user, the user will trigger the push button switch. As soon as the button is pressed, it forms a path and a shock is generated at the tip of the glove.



Fig.2.Electric shock device with glove

The input supply given to the device is between 1.5 Volt to 4 Volt with 3 to 5 Amp. The output of the electric shock device is in the range of 100 V upto 4 kV, current intensity output is in the range of 100 to 500 mA, individual impulse duration is in the range of 10 to 100  $\mu$ s (microseconds), frequency of impulse is in the range of 2 to 40 Hz, electrical charge delivered is in the range of 15 to 500  $\mu$ C (micro coulombs), energy delivered is in the range of 0.9 to 10 J.

### III. CONCLUSION

A smart glove as a weapon is designed successfully for the protection of women from attackers. This smart glove is compact, light in weight and can easily be carried. The components used in this project are easily available and very economical.

This smart glove gives the shock to the attackers without killing them. The intensity of the shock is upto 4KV. In future, further improvement can be done like, the development of waterproof system, fabrication of GSM technology in the glove and use of GPS tracking system into glove.

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