Ultrasonic Snake Repeller

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Abstract- *Main purpose for this Project is to design an ultrasonic snake repeller circuit which will be used to prevent snakes entering into the particular area. Solar electronic snake repellent presented here is a solution to keep all poisonous snakes out of our reach. All you need is to place the device on the ground to remove snakes on your property, quickly and safely. The device will emit a strong pulse vibration through the ground which will make the snakes frightened.The heart of this entire circuit project is masthead diameter ,vibration motor, some basic components like resistors, capacitors ,diodes, switches, led, transistor and a battery.*

I. INTRODUCTION

Snake bites are a common problem in many parts of the world especially South Asia is the most heavily affected region. Reasons may be its high population density, widespread agricultural activities and prevalence of numerous venomous snake species etc. India has the highest number of deaths due to snake bites in the world with 35,000- 50,000 people dying per year according to World Health Organization. Snake bites happen mostly in late evenings and at night hours when the snakes are unintentionally stepped on or when snakes are picked up while rummaging through leaf litter, scrap materials etc. Snake bite is an important occupational injury affecting farmers and plantation workers. Open-style habitation and practice of sleeping on the floor also expose people to bites from nocturnal snake species. Most snake experts will agree that snakes will flee if get an opportunity to do so. The unique circuit has been designed to scare away many kinds of snakes. As it emits a strong pulsing vibration into the ground, the snake perceives the vibration as a source of danger and moves away to avoid encounter. Note that the density of the soil will greatly affect the effectiveness of the device. The more solid the ground, the better the device will function (frozen soil, irrigated or waterlogged ground never give good results). Snake experts tell that snakes will never go to a place where they are afraid of.similarly,like human beings (once we touch fire,we will never tend to touch that since it is a sign of danger).snakes also do the same when they are frightened.This technique keeps human beings as well as the snakes safe.snakes must be kept safe because life cycle chain should continue.

HARDWARE COMPONENTS:

1. RESISTORS 100K(1),1K(2)
2. CAPACITOR 100uF
3.TRANSISTORS (S8550)
4. LED
5. DIODE (1N4007)
6. VIBRATION MOTOR (3-5)V
7. SWITCH
8. BATTERY

1. RESISTOR:

A **resistor** is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and termination, transmission lines among other uses. High-power resistors that can dissipate many watts of electrical power as heat, may be used as part of motor controls, in power distribution systems, or as test loads for generators. Fixed resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity.

Fig:1.Hardware model of a resistor

2. CAPACITOR:

A **capacitor** is a passive two terminal electronic component that stores electrical energy in anelectric field. The effect of a capacitor is known as capacitance. While some capacitance exists between any two electrical conductors in proximity in a circuit, a capacitor is a component designed to

add capacitance to a circuit. The capacitor was originally known as a **condenser** or **condensator.** The original name is still widely used in many languages, but not commonly in English.

The physical form and construction of practical capacitors vary widely and many capacitor types are in common use. Most capacitors contain at least two electrical conductors often in the form of metallic plates or surfaces separated by a dielectric medium. A conductor may be a foil, thin film, sintered bead of metal, or an electrolyte. The nonconducting dielectric acts to increase the capacitor's charge capacity. Materials commonly used as dielectrics include glass, ceramic, plastic film, paper, mica, and oxide layers. Capacitors are widely used as parts of electrical circuits in many common electrical devices. Unlike a resistor, an ideal capacitor does not dissipate energy.

Fig:2. Hardware model of a capacitor

3. Transistor:

A **transistor** isa semiconductor usedto amplify or swi tch electronic signals and electrical power. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit. A voltage or current applied to one pair of the transistor's terminals controls the current through another pair of terminals. Because the controlled (output) power can be higher than the controlling (input) power, a transistor can amplify a signal. Today, some transistors are packaged individually, but many more are found embedded in integrated circuits.

The transistor is the fundamental building block of modern electronic devices, and is ubiquitous in modern electronic systems. Julius Edgar Lilienfeld patented a field-effect transistor in 1926, but it was not possible to actually construct a working device at that time. The first practically implemented device was a point-contact transistor invented in 1947 by American physicists John Bardeen, Walter Brattain, and William Shockley. The transistor revolutionized the field of electronics, and paved the way for smaller and cheaper radios, calculators, and computers, among other things. The transistor is on the list of IEEE milestones in electronics, and Bardeen.

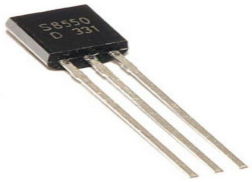

Fig:3. Hardware model of transistor S8550

4. LED:

A **light-emitting diode** (**LED**) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons. This effect is called electroluminescence. The color of the light (corresponding to the energy of the photons) is determined by the energy required for electrons to cross the band gap of the semiconductor. White light is obtained by using multiple semiconductors or a layer of light-emitting phosphor on the semiconductor device.

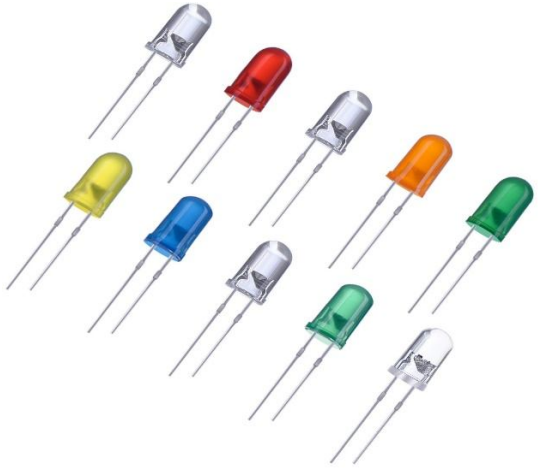

Fig:4.LED lights

5. Diode:

A **diode** is a two-terminal electronic component that conducts current primarily in one direction (asymmetric conductance); it has low (ideally zero) resistance in one direction, and high (ideally infinite) resistance in the other. A diode vacuum tube or **thermionic diode** is a vacuum tube with two electrodes, a heated cathode and a plate, in which electrons can flow in only one direction, from cathode to plate. A **semiconductor diode**, the most common type today, is a crystalline piece of semiconductor material with a p–n

junction connected to two electrical terminals. Semiconductor diodes were the first semiconductor electronic devices. The discovery of asymmetric electrical conduction across the contact between a crystalline mineral and a metal was made by German physicist Ferdinand Braun in 1874. Today, most diodes are made of silicon, but other materials such as gallium arsenide and germanium are used.

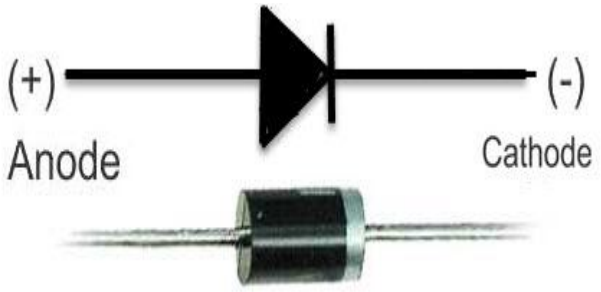

Fig:5. Diode.

6. Vibration motor:

A **vibrator** is a mechanical device to generate vibrations. The vibration is often generated by an electric motor with an unbalanced mass on its driveshaft. There are many different types of vibrator. Typically, they are components of larger products such as smartphones, pagers.

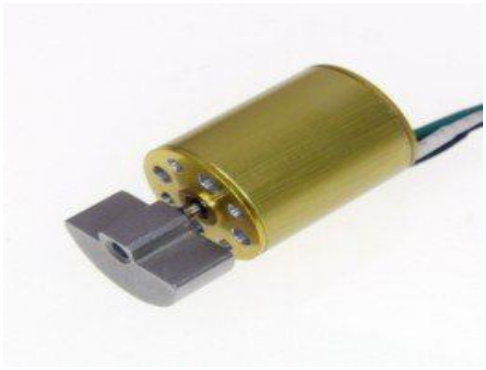

Fig:6. Mechanical vibrator

7. Switch:

A **push-button** (also spelled **pushbutton**) or simply **button** is a simple switch mechanism for controlling some aspect of a machine or a process. Buttons are typically made out of hard material, usually plastic or metal.[1] The surface is usually flat or shaped to accommodate the human finger or hand, so as to be easily depressed or pushed. Buttons are most often biased switches, although many un-biased buttons (due to their physical nature) still require a spring to return to their un-pushed state. Terms for the pushing include **pressing**, **depressing**, **mashing**, **slapping**, **hitting**, and **punching**.

Fig:7.Switch

8. Battery:

The **nine-volt battery**, or **9-volt battery**, is a common size of battery that was introduced for the early transistor radios. It has a rectangular prism shape with rounded edges and a polarized snap connector at the top. This type is commonly used in walkie-talkies, clocks and smoke detectors.

The nine-volt battery format is commonly available in primary carbon-zinc and alkaline chemistry, in primary lithium iron disulfide, and in rechargeable form in nickel-cadmium, nickel-metal hydride and lithium-ion. Mercury-oxide batteries of this format, once common, have not been manufactured in many years due to their mercury content.

Fig:8.Battery

II. RESULTS

- From this methodology, we havecompleted a snake repellant gear which is used to safeguard human beings as well as the snakes from danger.
- People feel comfort using snake repeller since it can be carried wherever we go and it is light in weight.

- Snake repeller can be used anywhere where there seems to be a danger of presence of snakes.
- This device will not kill or harm snakes,it will just make snakes frightened.
- If the snakes are killed,there would be more rats growth that will spoil the crop and the life cycle chain cannot be continued effectively.

III. CONCLUSION

We hereby, conclude that the project that we have made will be useful to all the people who work in farms and forest regions which will provide peace to the community. This device is portable and can be used in any place. This small project can save so many lives from i7snake bites. This project is majorly used in agricultural sector where farmers are safeguarded by this device. Therefore, farmers can work happily in their fields avoiding the fear of snake bites.

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