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Metal Detector Prototype

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OBJECTIVE

- Designing and building a type of metal detector using 555 Timer IC.
- Designing a circuit diagram that is as simple as possible in order to develop another more complex diagram in the future.
- Detect metals from different distances, shown by the changing sound frequency of the device.

PROCESS OF RESOLUTION

1. Sketching of metal detector circuit
2. Analyzing how the circuit works
3. Doing the diagram circuit in The First Multisim programme
4. Sourcing and buying the components
5. Building the cuircuit on Protoboard
6. Obtaining results and conclusions
7. Adapting the device to detect metals from different distances

HOW IT WORKS

Magnetic field is generated by the coil

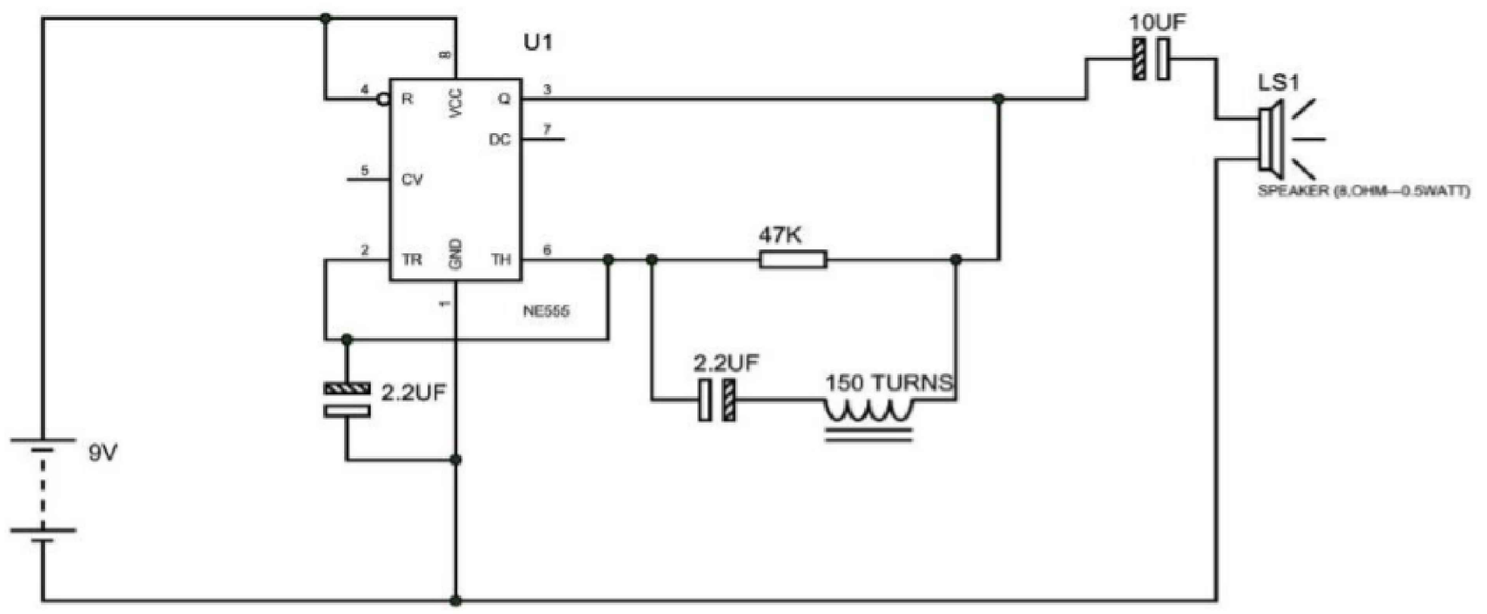
This coil generates currents through whatever metal object that it finds in its way

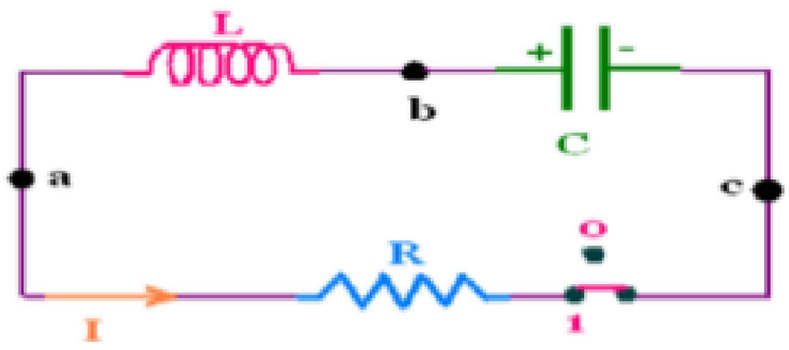
A resistor (R), an inductor (L), and a capacitor (C), forms the RLC circuit

The impedance of RLC changes, causing the signal to change resulting in variation of sound generated in speaker.

The 555 IC timer generates pulses with frequencies audible to humans

The capacitor between pin2 and pin1 generates audible frequencies





Circuit Components	
1	555 Timer IC
2	2.2 µF - 10 µF Capacitor
3	47 KΩ resistor
4	Speaker
5	*Coil*

CONCLUSION

- The adaptation of our diagram circuit depends on the type of metal detector device.
- Using The First Multisim tool saves time and adapts our circuit depending on our necessity.
- Ways to integrate 555 Timer IC in a metal detector device.