



BUILDING A SIMPLE ALARM CIRCUIT

with a Tripwire

In this experiment, you will build a simple circuit that sounds an alarm when a “tripwire” is broken. This shows how circuits can be used in real-life security systems.

GOAL

Build a circuit using a tripwire so that when the string is pulled or cut, the circuit closes and the alarm sounds.

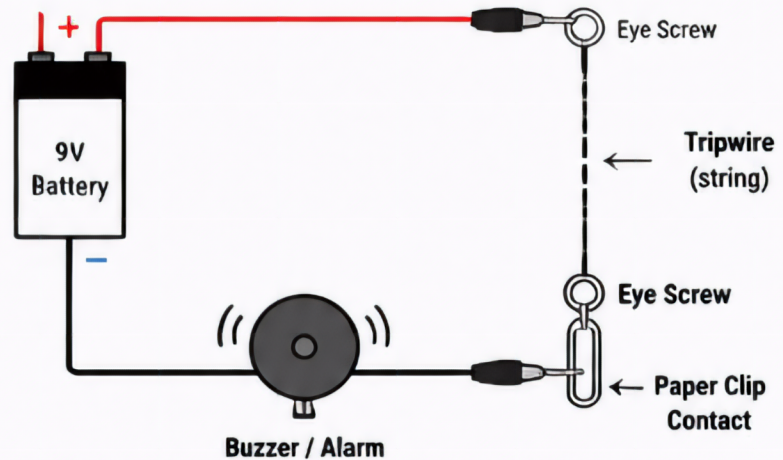
MATERIALS

- 1 × 9V battery (with connector)
- 1 × Piezo buzzer or small alarm (3–12V)
- 2 × Small eye screws
- String or thin cord (for tripwire)
- 2 × Paper clips (or split key rings)
- 4 × Alligator clip jumper wires
- Cardboard or wood board (base)
- Tape (optional)
- Scissors



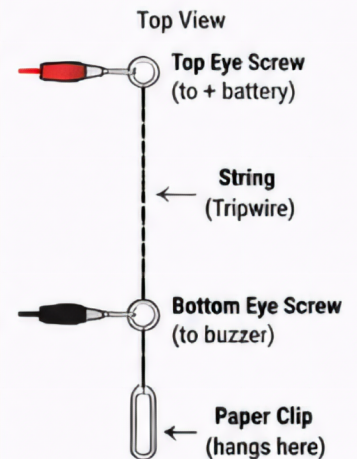
CIRCUIT OVERVIEW

When the tripwire is intact, the circuit is open and the alarm is off. When the tripwire is broken, the circuit closes and the alarm sounds.



PROCEDURE

1. Attach an eye screw near the top of your base (right side).
2. Attach a second eye screw near the bottom of the base (right side), directly below the first.
3. Tie one end of the string to the top eye screw. Run the string down to the bottom eye screw and tie it there. The string should be taut like a tripwire.
4. Bend a paper clip so it can hang freely and touch the bottom eye screw if the string is broken. The paper clip should **NOT** be touching the bottom eye screw while the string is intact.
5. Connect the battery positive (+) to the top eye screw using an alligator clip.
6. Connect the bottom eye screw to the buzzer (alarm) using an alligator clip.
7. Connect the other side of the buzzer to the battery negative (-).
8. Test the alarm: With the string intact, the alarm should be off. Carefully cut or pull the string. The paper clip should fall and touch the bottom eye screw, closing the circuit and turning on the alarm.



OBSERVATIONS

What happened when the string was intact?

What happened when the string was broken?

ANALYSIS

1. Why did the alarm stay off when the string was intact?

2. What completed the circuit when the string was broken?

3. Where could this type of circuit be used in real life?



SAFETY FIRST

Do not short the battery. Do not plug this circuit into wall power. Use only low-voltage components (3–12V).