

dbolo®  
迪宝乐

# Electronic Kit

Ages: 8+



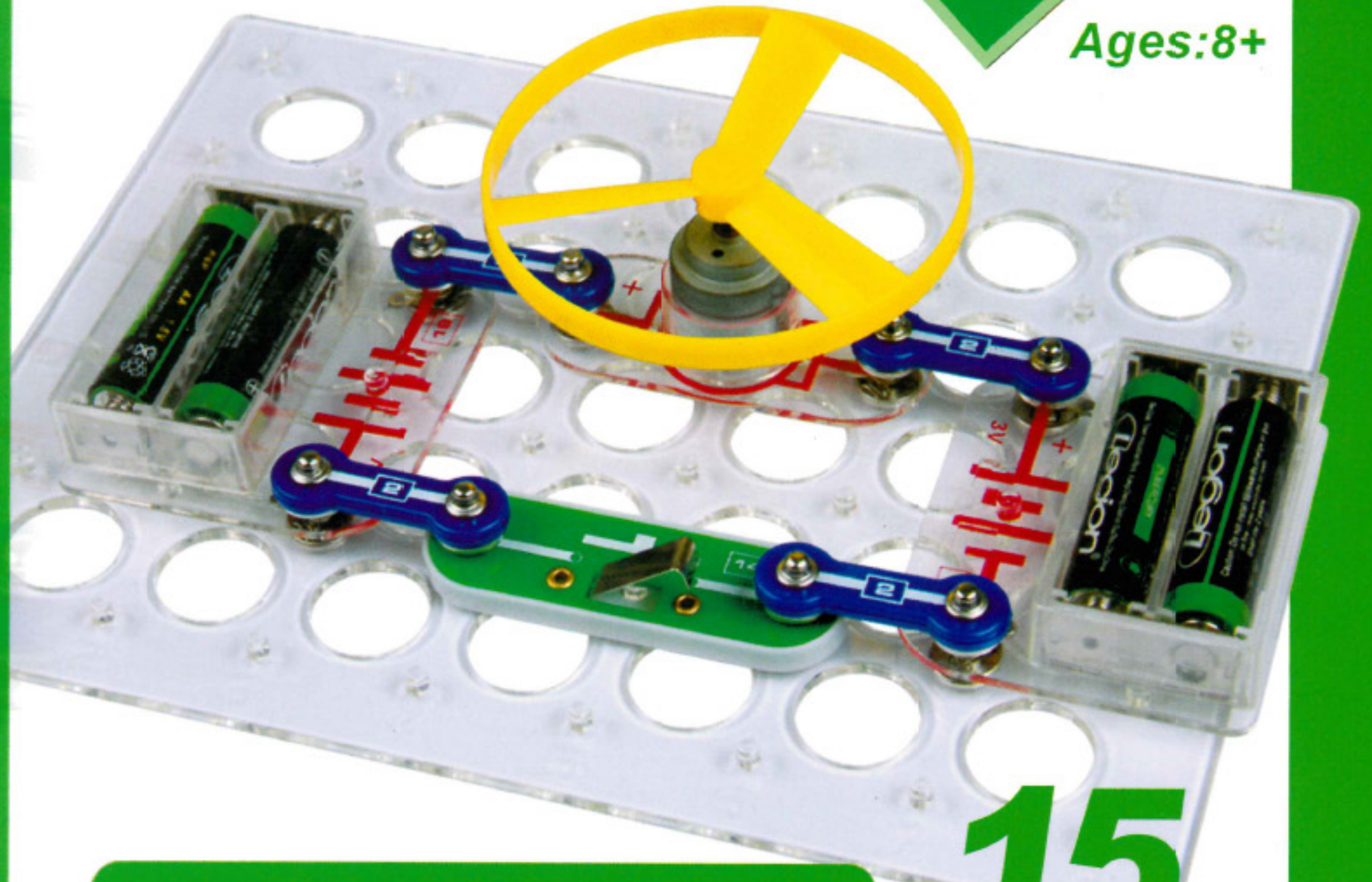
Flying Saucer



Variable Speed Electric Fan



Alterating Light



Encourage your child to make his own

**15**  
Experiments

# Safety Information

## WARNING!

- Shock hazard- Never connect the component to the electrical outlets in your home in any way!
- Choking Hazard- Small parts. Not for children under 3 years.
- Tidy away the plastic sheeting in time after unpacking, avoid the children get asphyxiated by playing.
- This product contains a motor. Do not touch the motor or fan during operation. Do not lean over the motor. Do not launch the fan at people, animals, or objects. Eye protection is recommended.
- Use under the supervision of an adult and read all instructions, follow them and keep for future reference.
- Only for use by children age 8 years and older.
- Connecting components incorrectly could cause short circuiting and causing damage to the products.
- Always check your wiring before turning on circuit unattended while the batteries are installed. Never connect additional batteries to your circuits. Discard any cracked or broken parts.









## ATTENTION

- This product contains a glass light-bulb. Misuse may cause it to break, resulting in sharp pieces that could result in a cut. Use with caution.
- Please use four AA Batteries, do not connect positive and negative poles directly.
- This kit contains a magnet. Magnets becoming attached to a metallic object inside the human body can cause serious or fatal injury. Seek immediate medical help if the magnet is swallowed or inhaled.

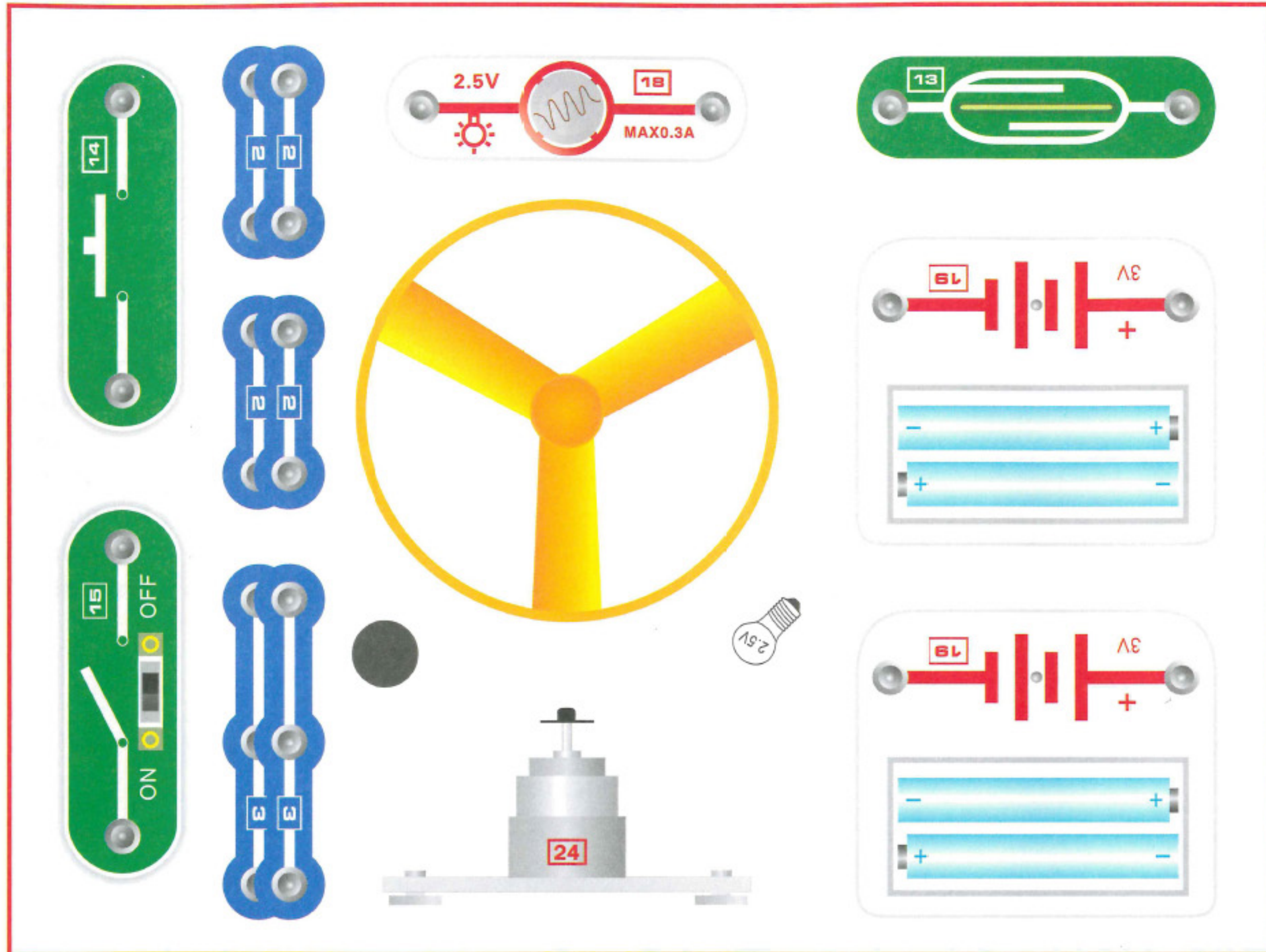
## BATTERIES:

- 1) 4 x AA (1.5 volt) batteries are required, which are not included in this kit.
- 2) Only insert batteries once a circuit is complete and has been carefully checked for errors. Always remove the batteries before dismantling the circuit.
- 3) Non rechargeable batteries are not to be recharged.
- 4) Rechargeable batteries should only be charged under adult supervision. and should not be recharged while in the product.
- 5) Different types of batteries or old and new batteries are not to be mixed.
- 6) Remove batteries when they are used up.
- 7) Do not short circuit the battery terminals.
- 8) Never throw batteries in fire or attempt to open its outer casing.
- 9) Batteries are harmful if swallowed, so keep away from small children.
- 10) Do not connect batteries or battery holders in parallel.

# Components List

Number	Description	Item
2	Two-Snap Connector	 4pcs
3	Three-Snap Connector	 2pcs
13	Reed Switch	
14	Button Switch	
15	Switch	
18	2.5V Lamp unit	
19	Battery Holder-uses 1.5V type AA(not included)	
24	Motor	
Other	Fan Blade 2.5V Bulb Magnet Circuit Board	

# Component Layout



# Content

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# Explanation for principles

## 1. Principle of snap connector:

The blue snap connector are just wires used to connect other components, they are used to transport electricity and do not affect circuit performance. They come in different lengths to allow orderly arrangement of connections on the circuit board.

## 2. Principle of reed switch:

Fix two iron sheets in a hermetic glass tube. Generally, the two iron sheets are disconnected. When a magnet is near the reed switch, the iron sheets are magnetized, thereby contacted with each other. Then the circuit is put through. The reed switch can be used as a magnetic switch.

## 3. Principle of Button switch:

The button switch connects (pressed, "ON") or disconnects(not pressed, "OFF") the wires in a circuits. When ON it has no effect on circuit performance. It turns on electricity just like a faucet turns on water from a pipe.

## 4. Principle of slide switch:

The slide switch connects the center snap

to one of the other two snaps. When connected it has no effect on circuit performance. It directs electricity just like a valve controls water in pipe.

## 5. Principle of 2.5 V Lamp:

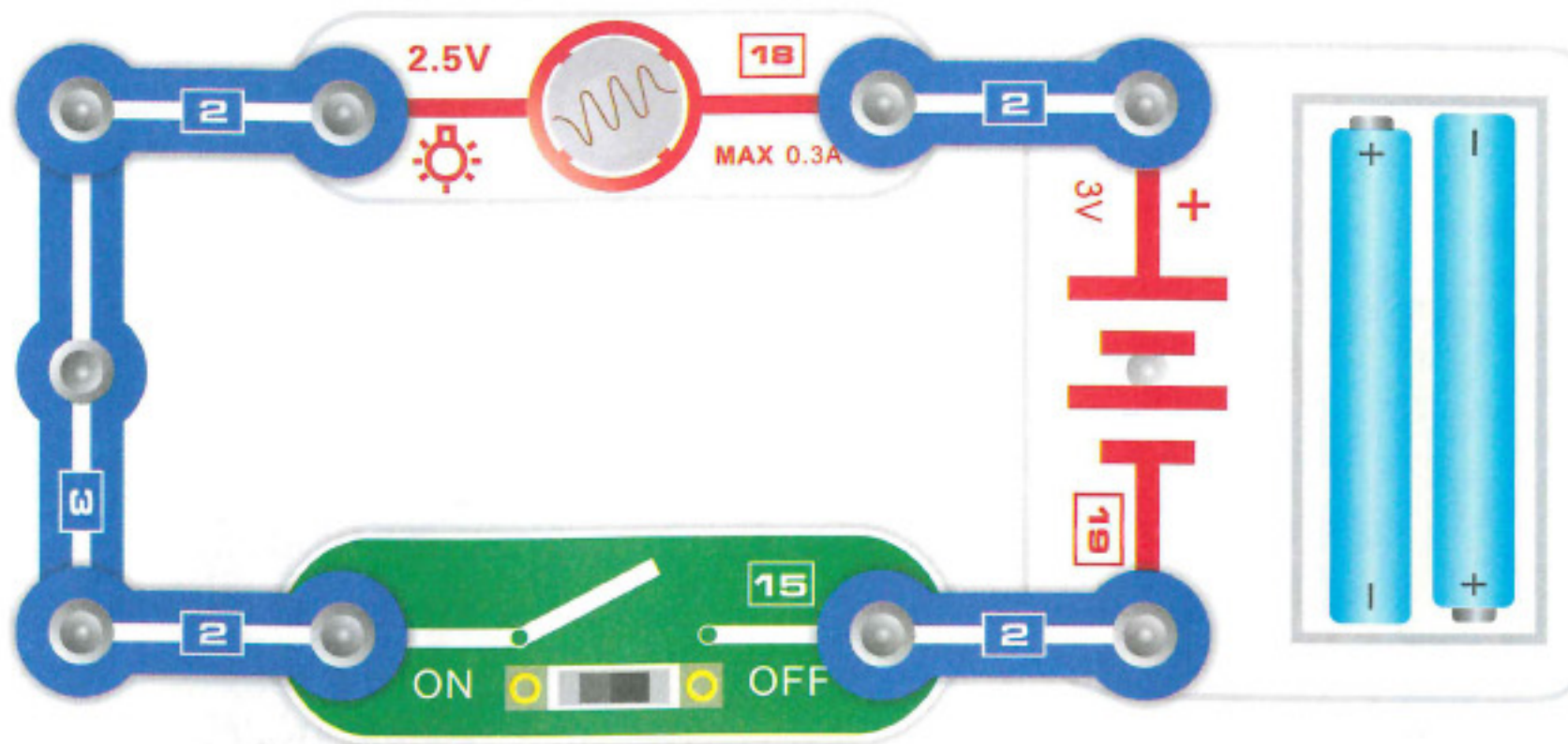
A light bulb, contains a special wire that glows bright when a large electric current passes through it. Voltages above the bulb's rating can burn out the wire.

## 6. Principle of batteries:

The batteries produce an electrical voltage using a chemical reaction. This "voltage" can be thought of as electrical pressure, pushing electrical "current" through a circuit. This voltage is much lower and much safer than that used in your house wiring. Using more batteries increases the "pressure" and so more electricity flows.

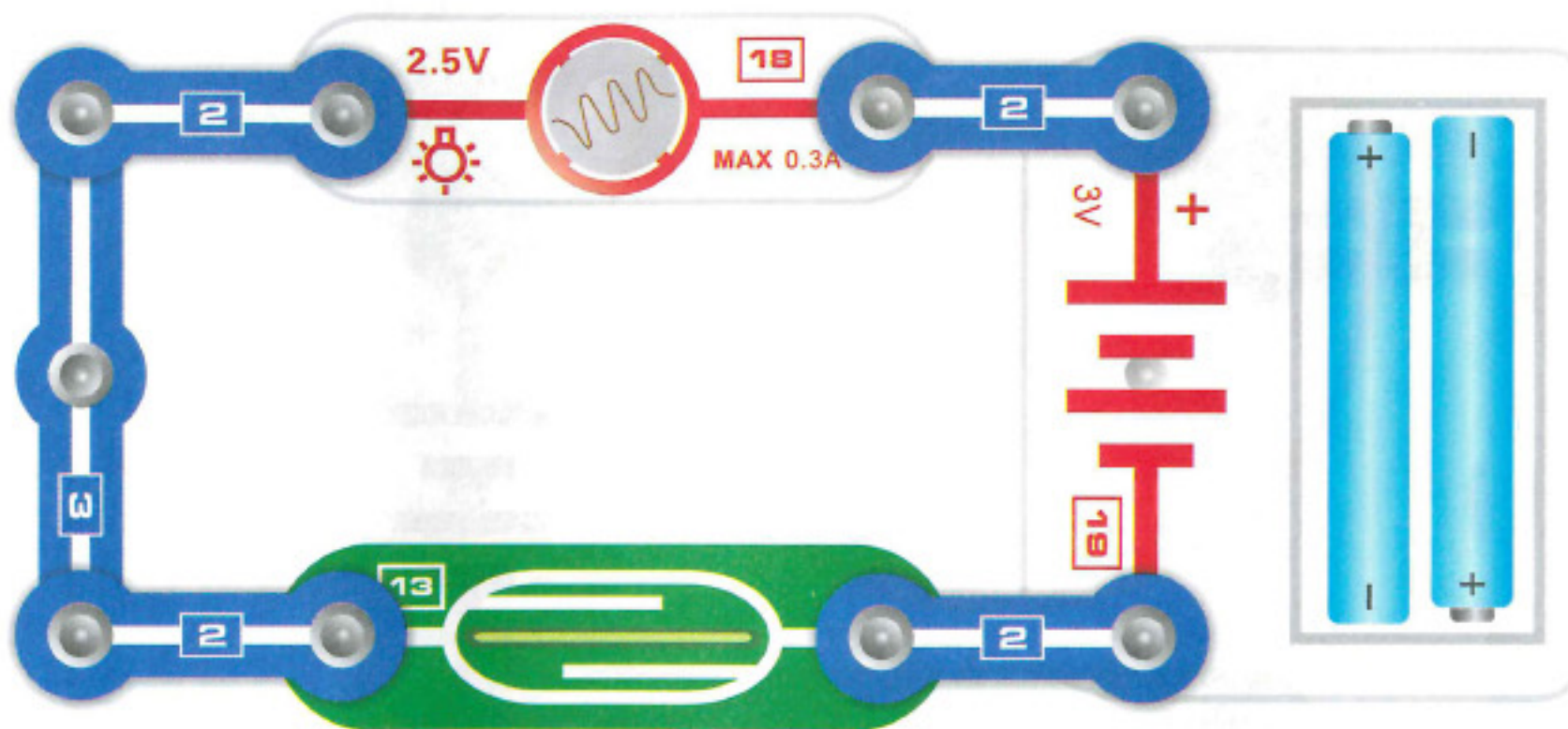
## 7. Principle of motor:

The motor converts electricity into mechanical motion. An electric current through the motor will turn the shaft. It can be used as a generator, since it produces an electric current when the shaft is turned.



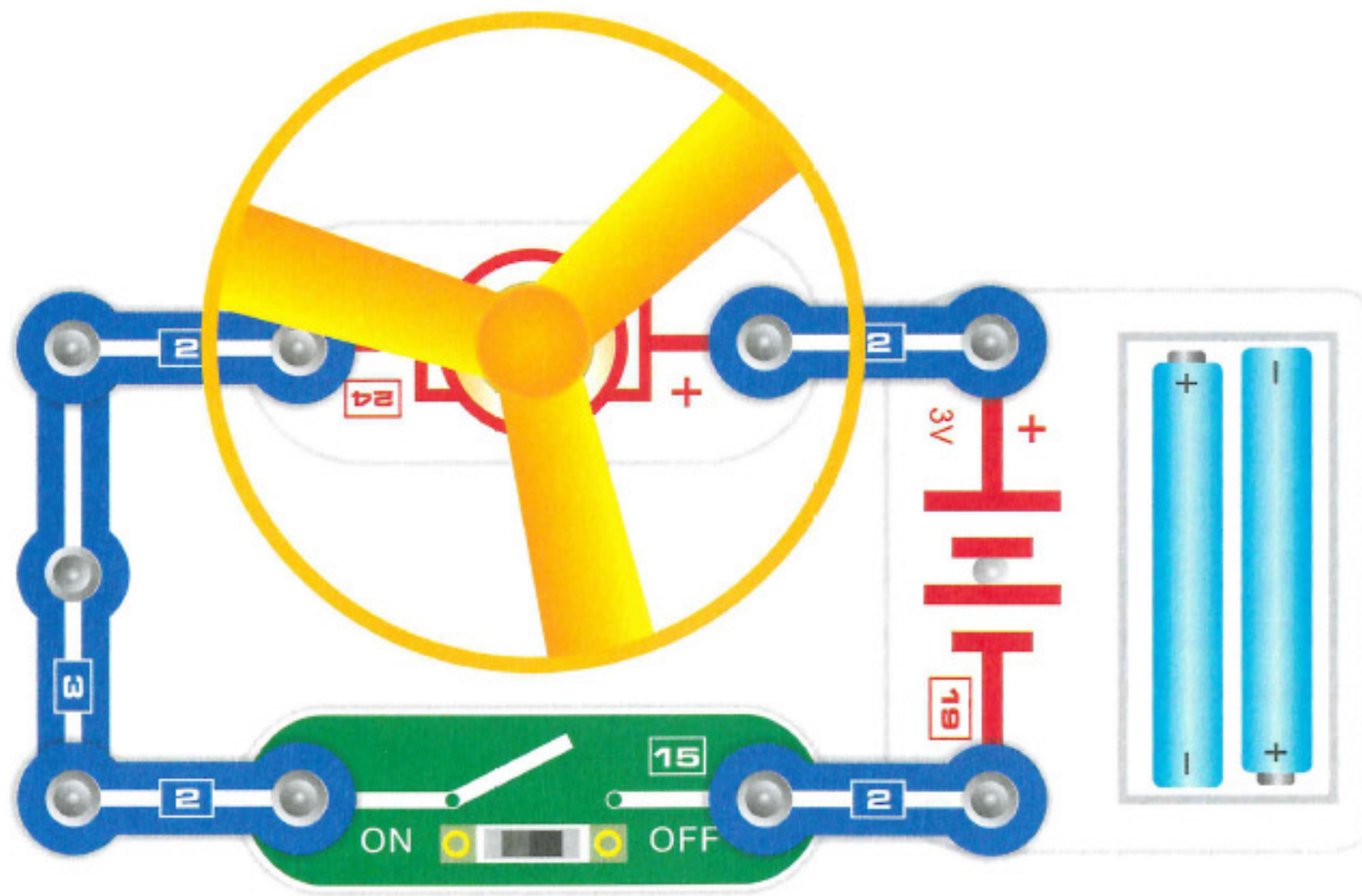
### 1. Lamp

When the switch is turned on, the lamp lights. When the switch is turned off, the lamp dies out.



### 2. Magnet-controlled lamp

Build the circuit as shown in the diagram, place the magnet close to the reed switch, the lamp lights, take the magnet away from the reed switch, the lamp goes out.

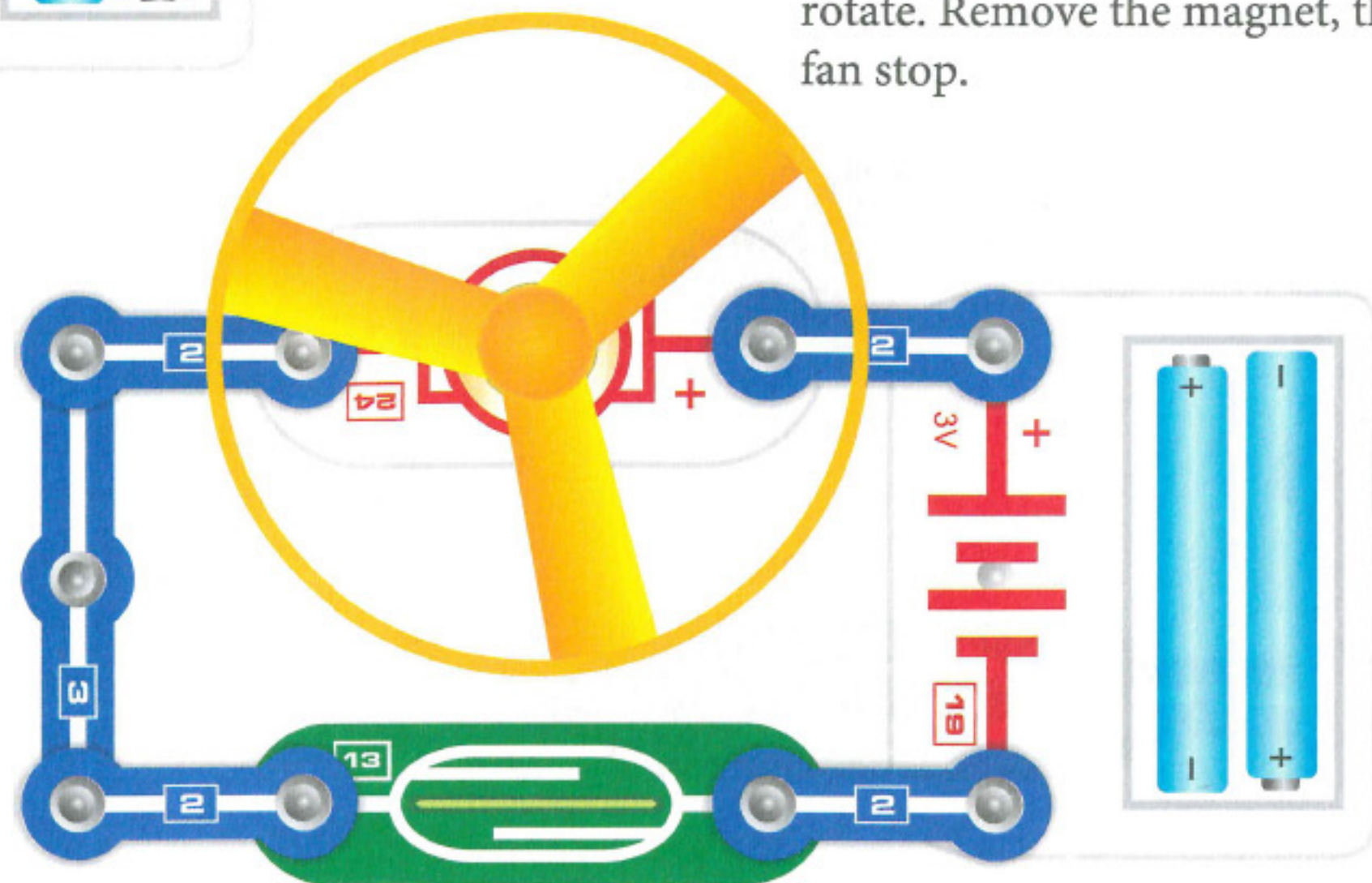


### 3. Electric fan

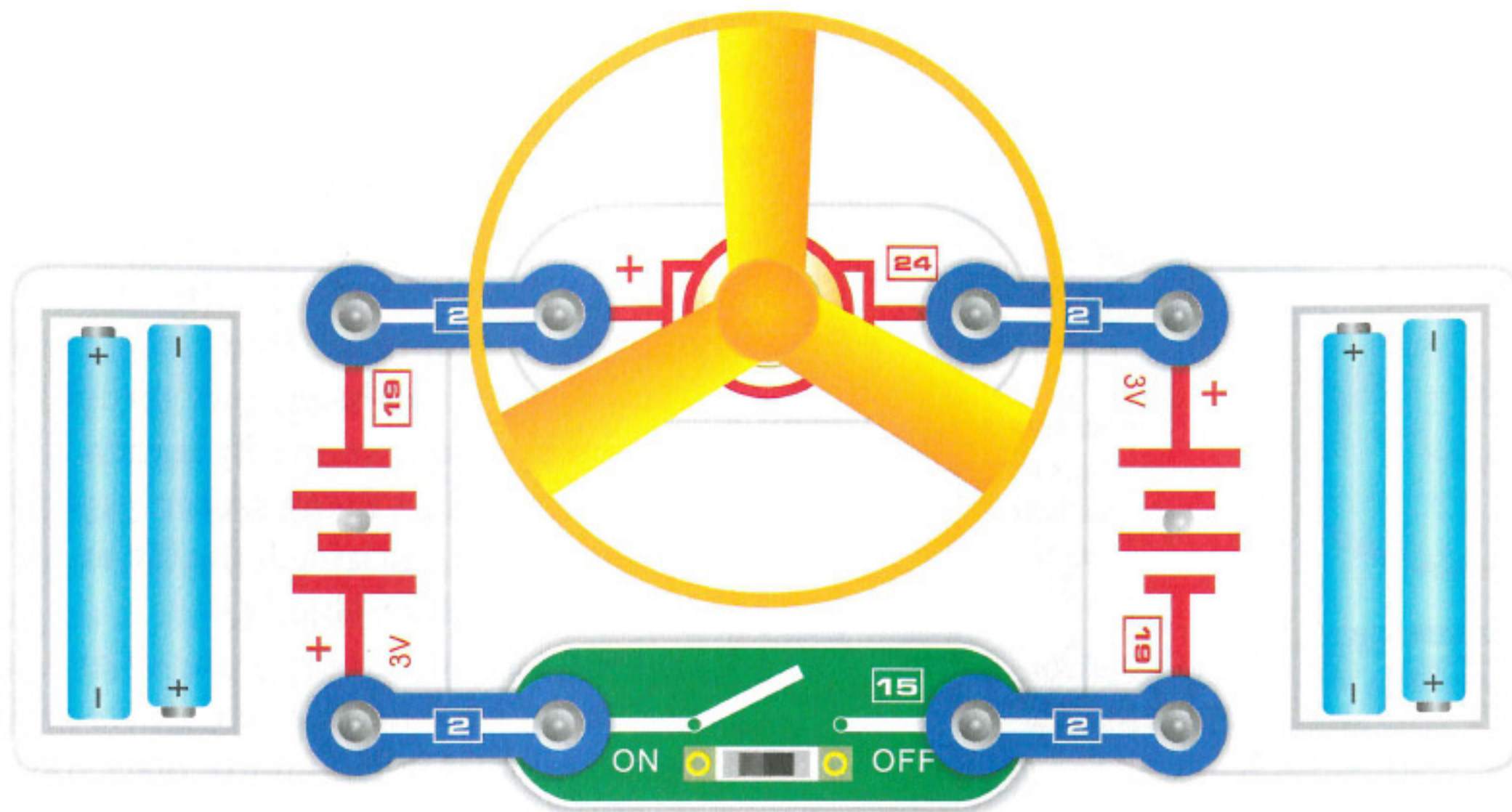
First, install the fan blade on the motor, then turn on the switch. The fan will start rotate.

### 4. Magnet-controlled fan

Build the circuit as shown in the diagram, place a magnet close to the reed switch, the fan will rotate. Remove the magnet, the fan stop.

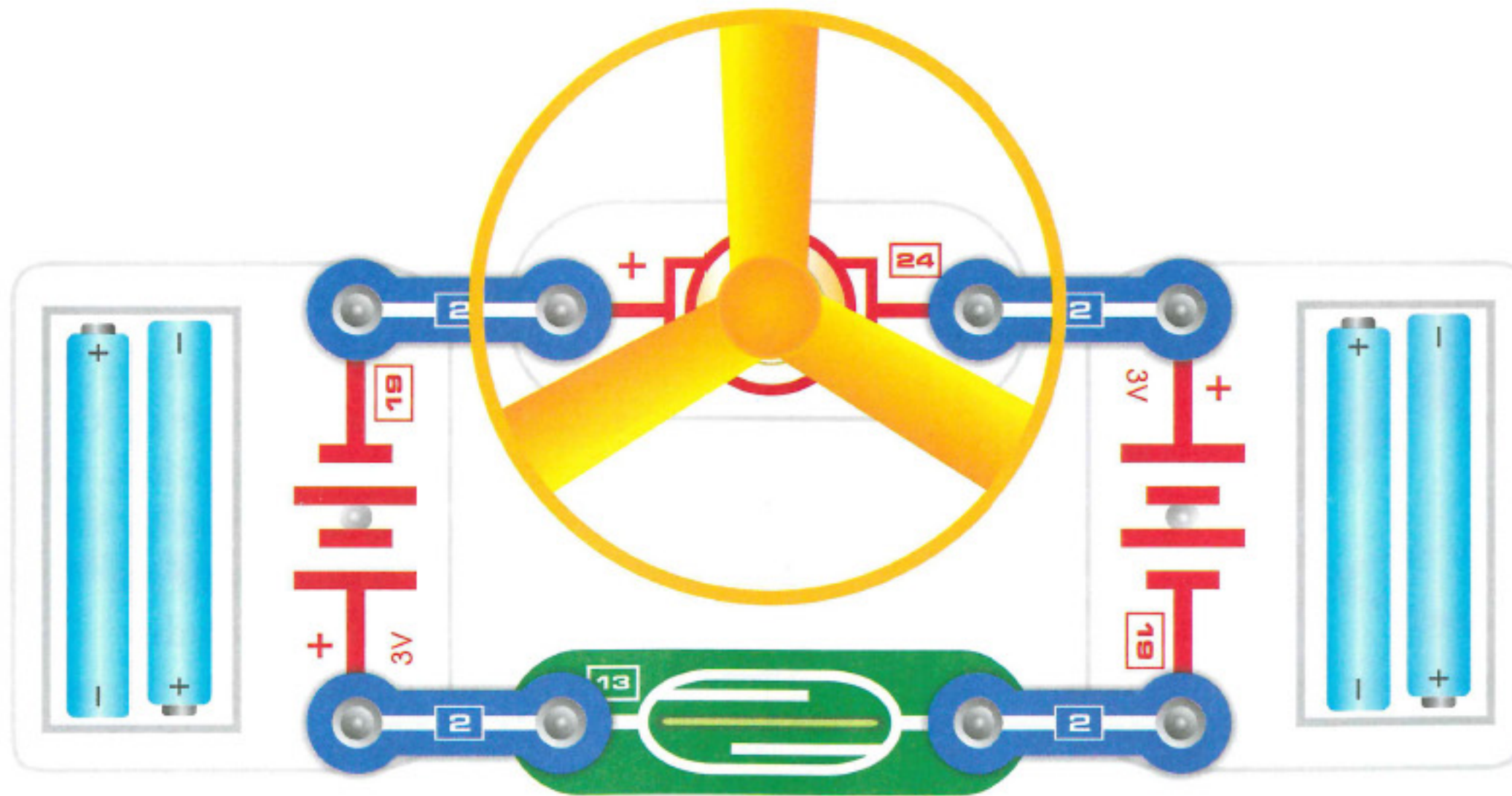






### 5. Flying saucer

Build the circuit as shown in the diagram, place the fan blade on the motor. Then turn on the switch, wait until the motor has reached maximum rotation, turn off the switch abruptly, the fan blade automatically launches into the air like a flying saucer. (Caution: Do not launch the fan at people, animals, or objects.)

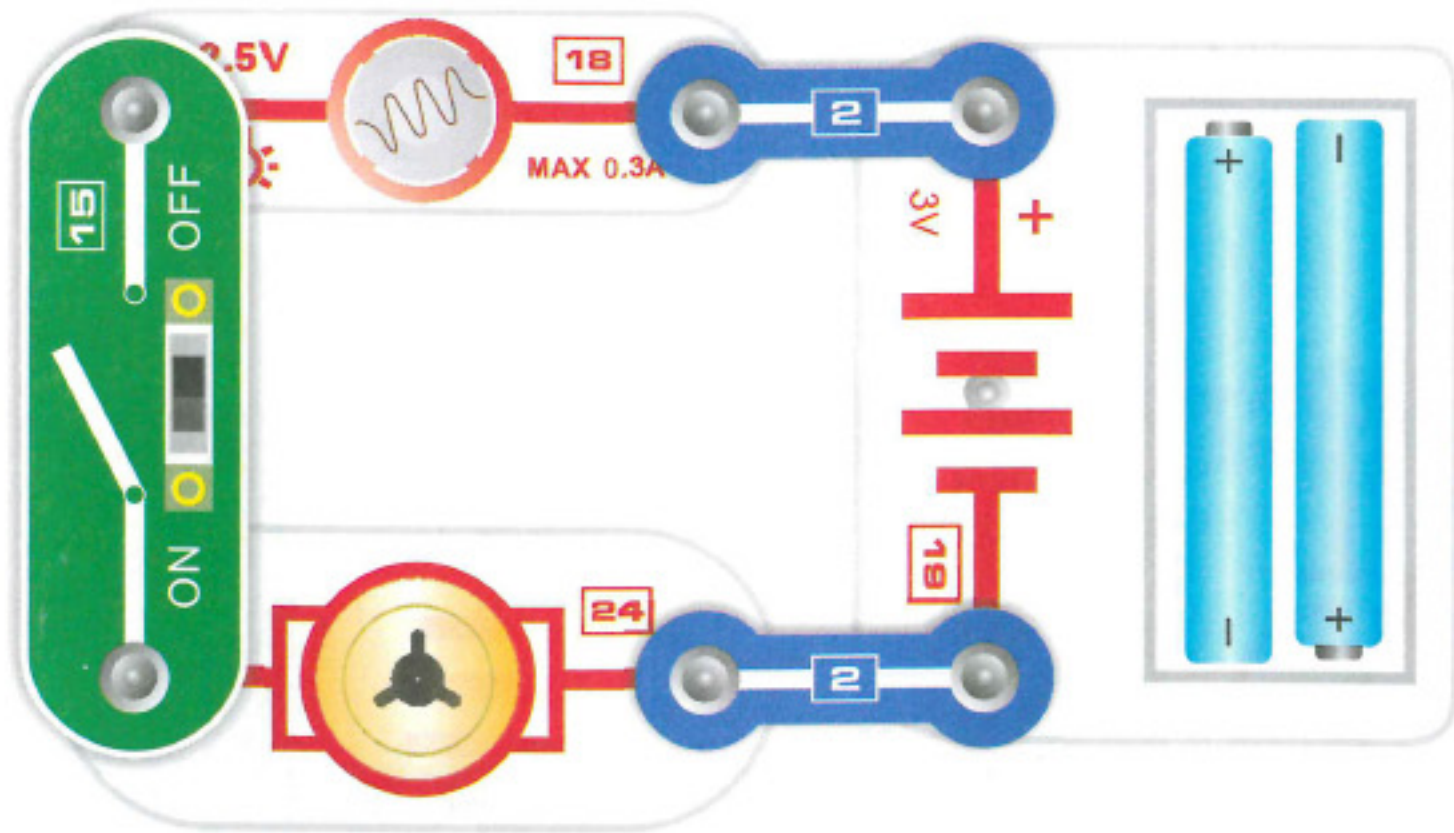


### 6. Magnet-controlled flying saucer

Build the circuit as shown in the diagram, place a magnet close to the reed switch, the motor rotates. Wait until the motor has reached maximum rotation, remove the magnet abruptly, the fan blade automatically launches into the air like a flying saucer. (Caution: Do not launch the fan at people, animals, or objects.)

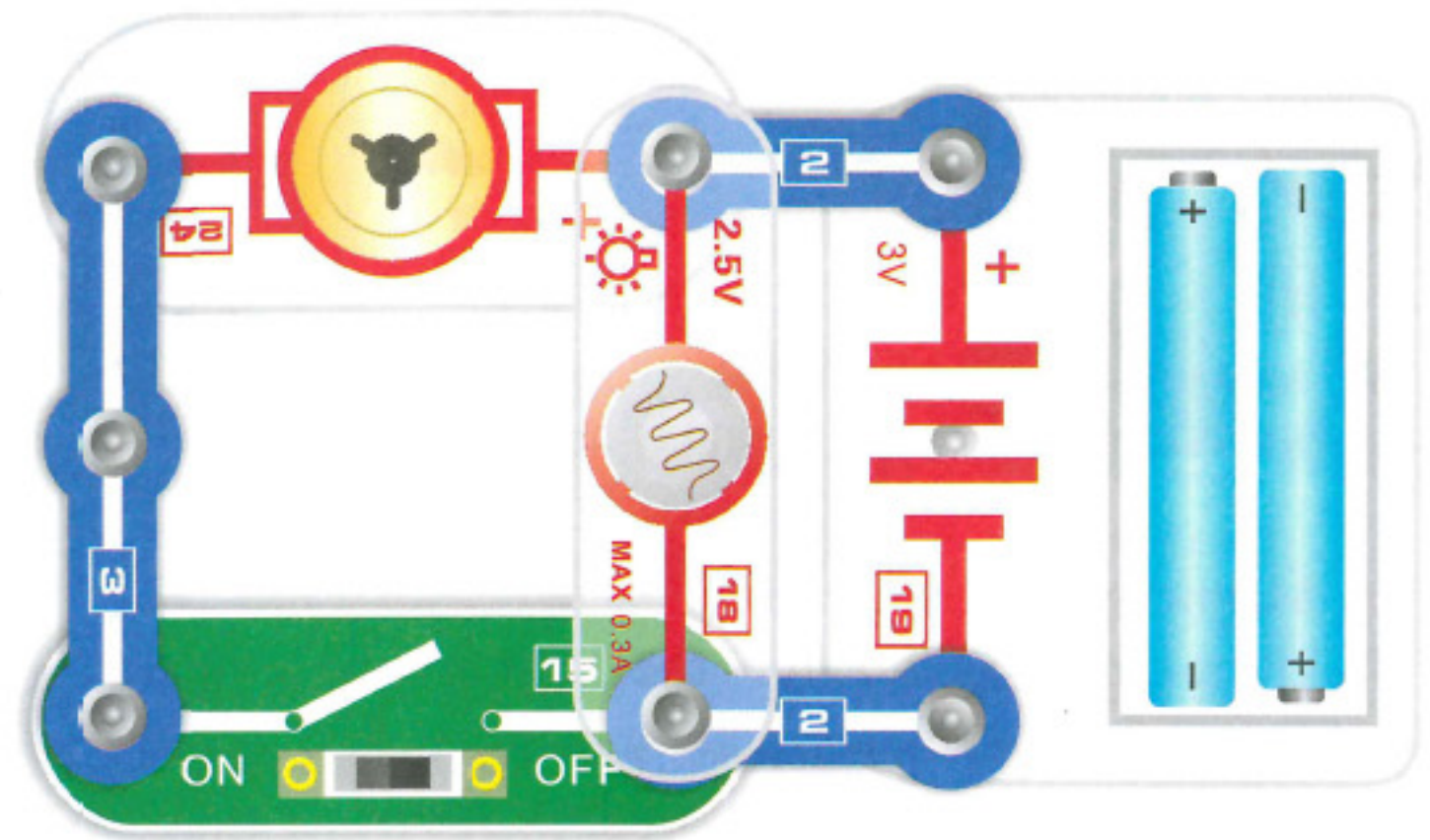
### 7. Direct and reverse running of motor

Reverse the connection of positive and negative poles of the motor, place the fan blade on the motor. Place a magnet close to the reed switch, you will find the rotation direction of motor is changed, the fan blade can not fly up and becomes a fan with a strong wind.



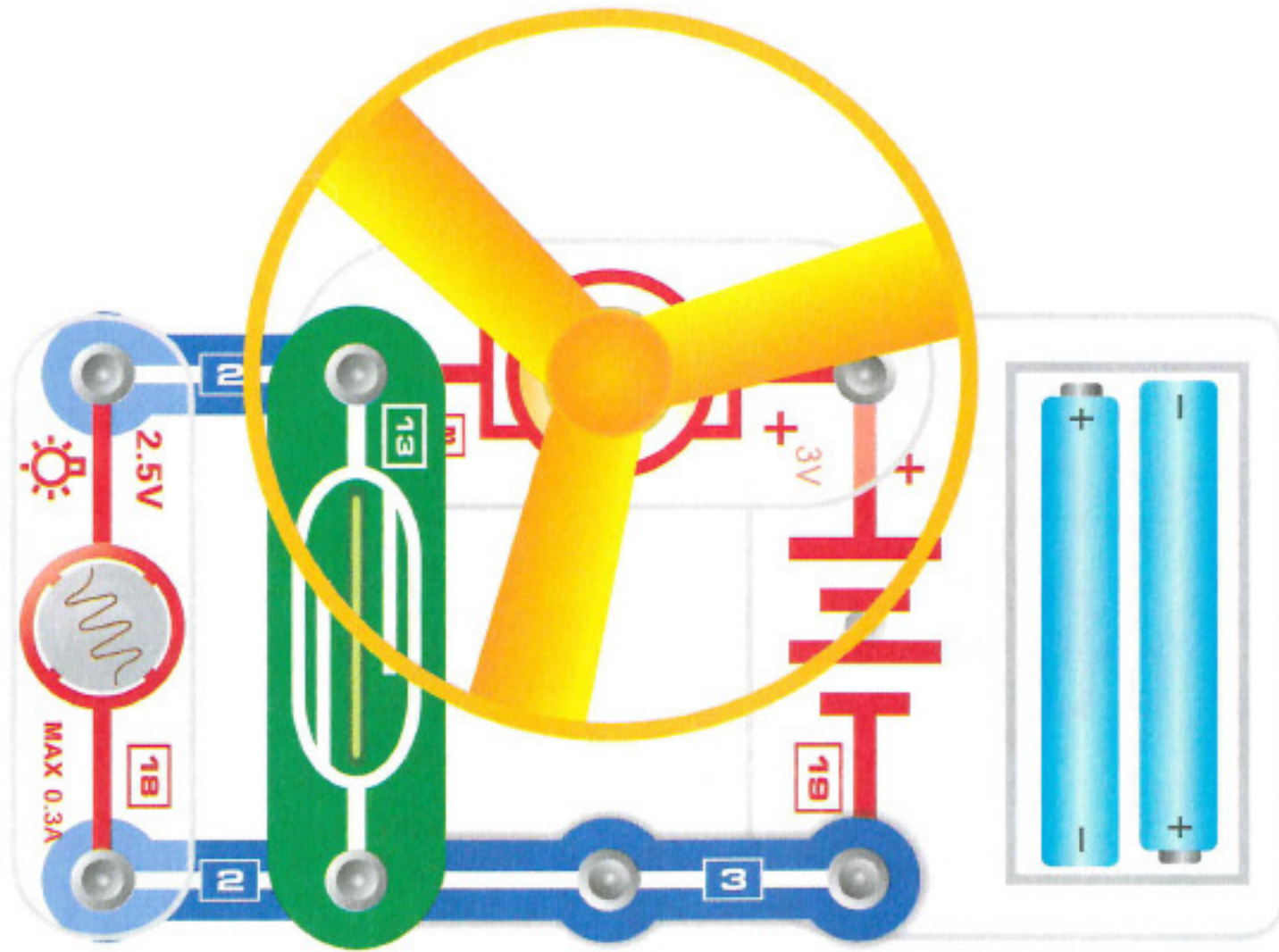
### 8. Series connection of lamps and motor

Turn on the switch, the motor rotates and bulb lights at the same time. Turn off the switch, the fan stop rotating and bulb going out at the same time.



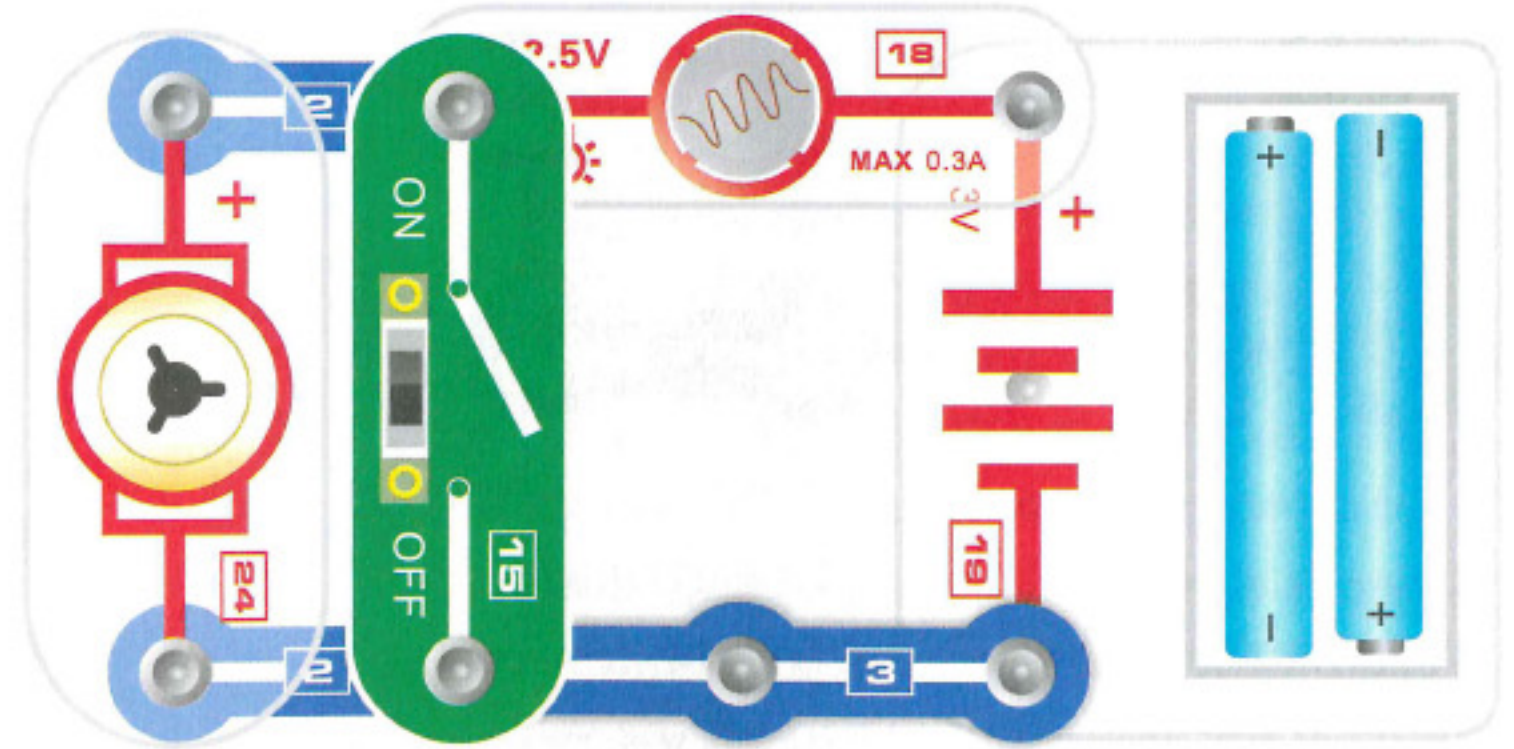
### 9. Hand-controlled parallel circuit

Build the circuit as shown in the diagram, the bulb lights. Turn on the switch, the motor and bulb is connected in parallel. The motor rotates and bulb still lights. Turn off the switch, the fan stop rotating, the bulb does not go out.



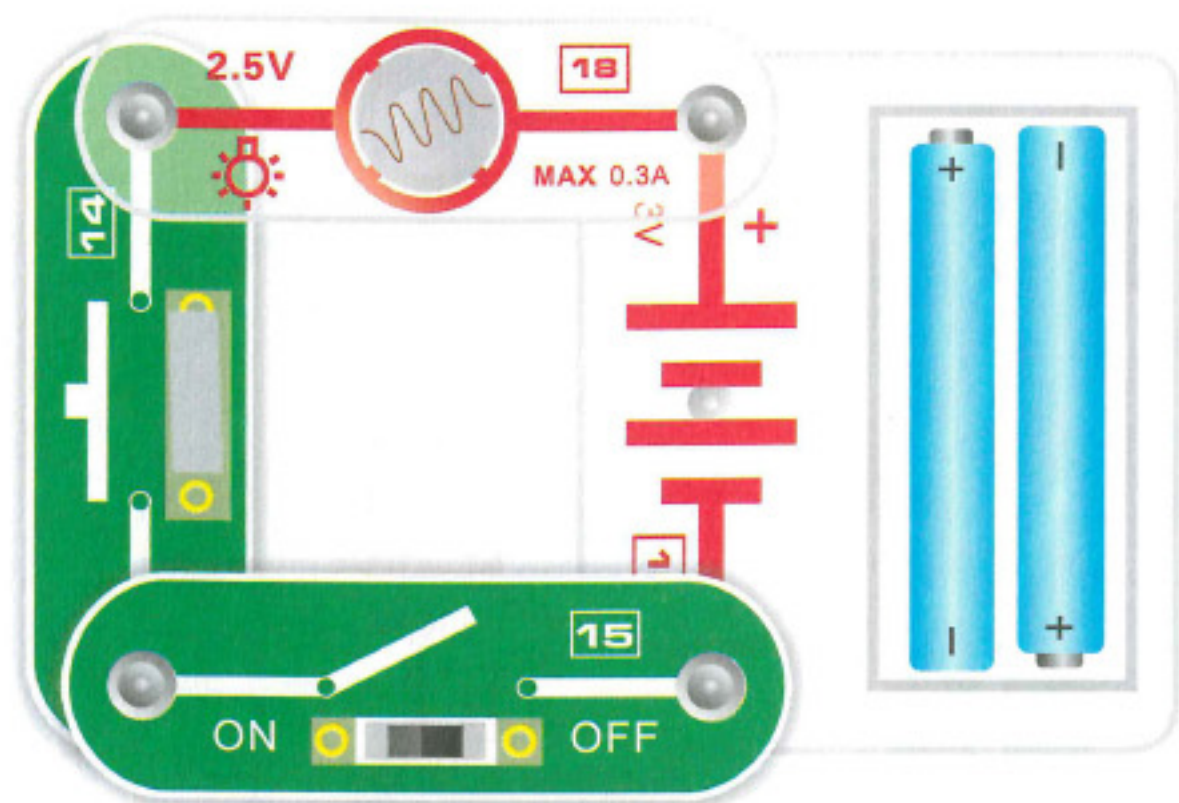
### 10. Magnet-controlled variable speed electric fan

Build the circuit as shown in the diagram, the lamp lights and the fan rotates, place a magnet close to the reed switch, the speed of fan will be variable.

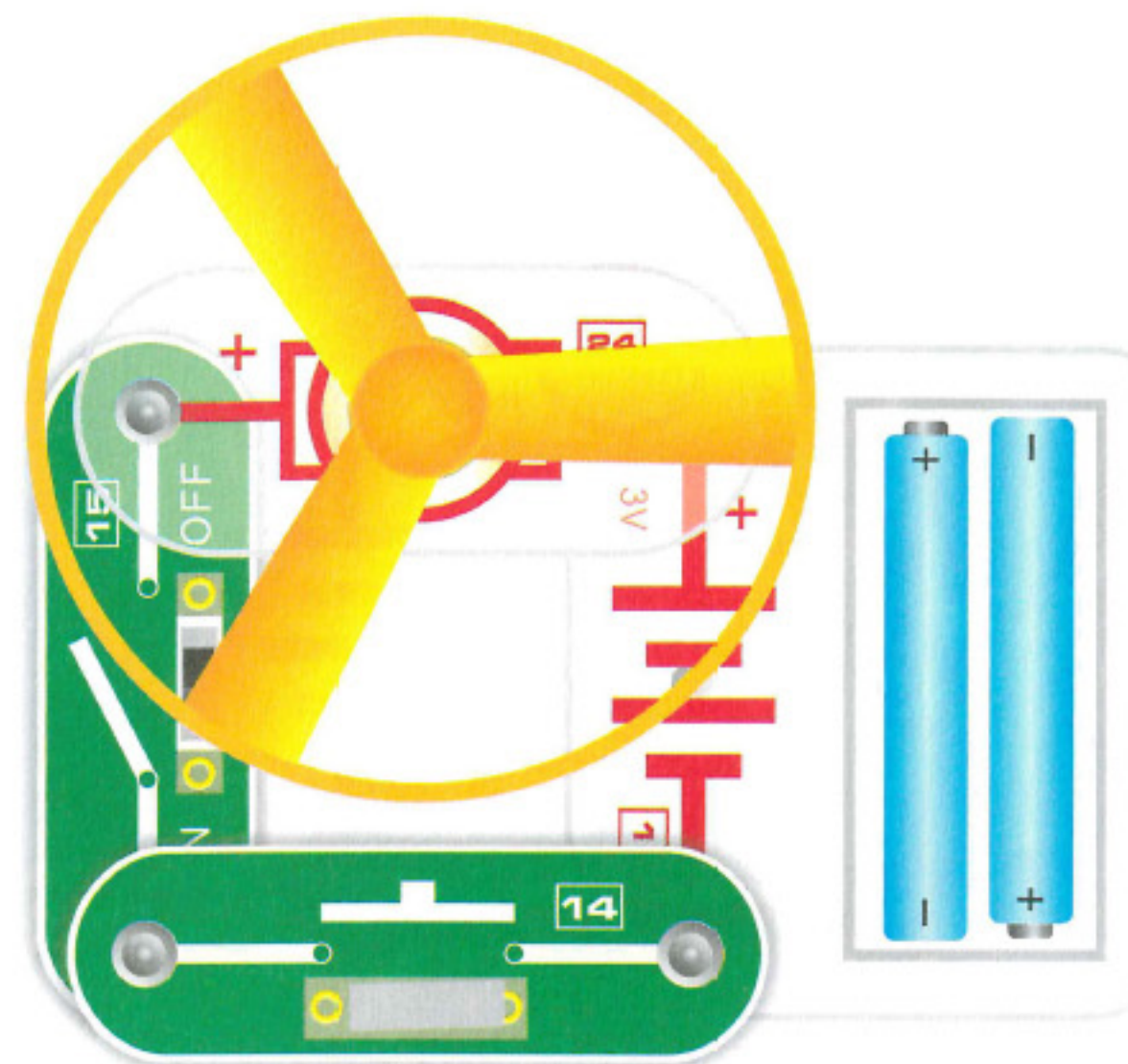


### 11. Alterating light

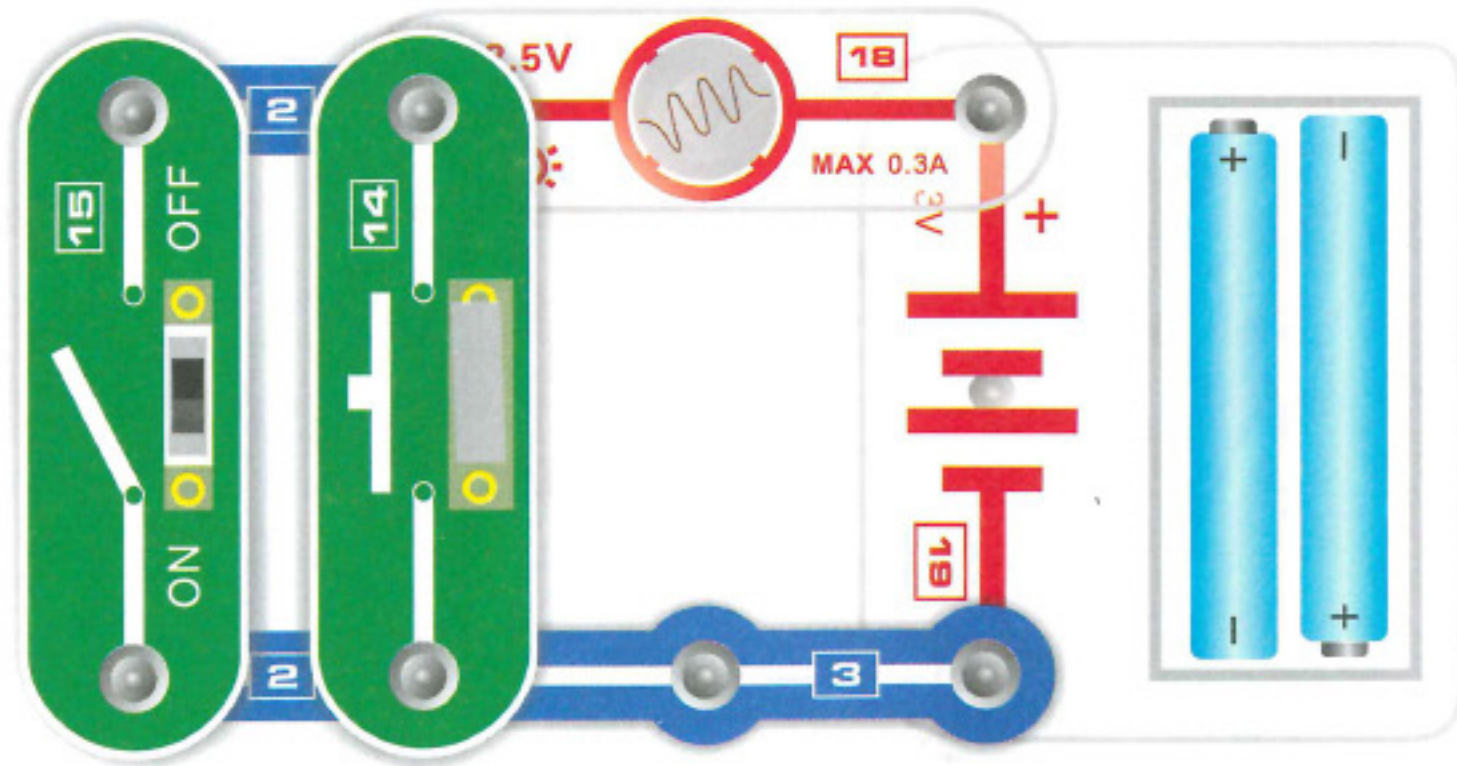
Build the circuit as shown in the diagram, the bulb lights and the rotates. Turn on the switch, the motor stop rotating and the bulb become more brighter.



**12 Two series-connected switches control one lamp**  
 After building the circuit, the bulb can be lighted only when pressing the button switch and turning on the switch at the same time.

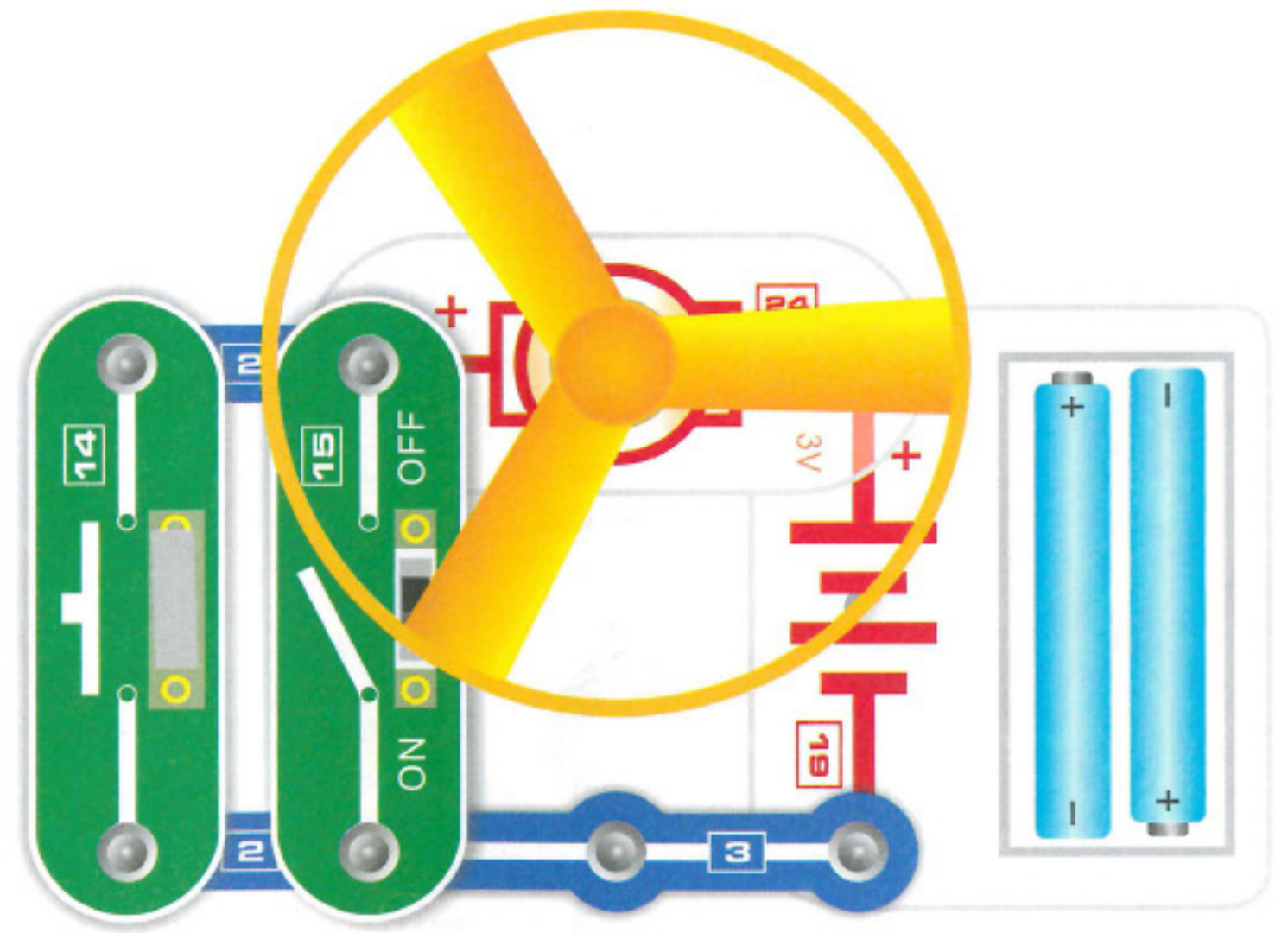


**13. Two series-connected switches control fan**  
 After building the circuit, the fan can be rotated only when pressing the button switch and turning on the switch at the same time.



#### 14. Two switches in parallel control one lamp

Pressing the button switch or turn on the switch can light the bulb, the bulb can go out only when two switches are turn off simultaneously.



#### 15. Two switches in parallel control fan

Pressing the button switch or turn on the switch can make the fan rotate, the rotation of fan can be stopped only when two switches are turn off simultaneously.



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