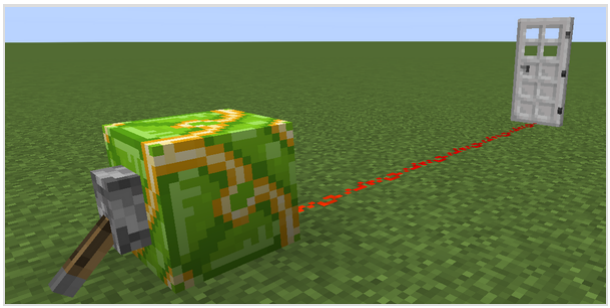
Tutorial: Mechanisms

< Tutorials
v t e

This tutorial page needs to be rewritten. [discuss]
It may contain inappropriate or inaccurate information. Please help us by rewriting it.
Reason: *The article should be about types of mechanisms, not a list of specific examples.*

Mechanisms are systems of blocks used to perform certain tasks, such as opening a door from afar or revealing a hidden staircase. These systems are built from simple components and normally involve some kind of user input, such as breaking a torch, which generates some kind of result, like a door being revealed. Mechanisms can range from simple switches that open and close doors from a safe distance, to complex devices such as combination locks that prevent intruders from entering your fort.



A door wired to a lever, one of the simplest redstone mechanisms

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Components

These are the basic, modular parts that can be combined to form any complex mechanism. Please note that individual items in the game are not considered components. Also, not all of these components have to be used when making a mechanism.

Physical components

- **Water Channel:** A channel in which water can flow. Water is commonly used to break torches, causing things to fall, or washing away crops, as well as to transport items or mobs.
- **Tube:** A long three by three structure that can be used for launching TNT.
- **Piston Switch:** Block 1 above ground level with redstone on top, with a piston that moves across to stop circuit. Used so pressing a button or lever stops another circuit.
- **Pipe**: A pipe of hoppers or clock-fed droppers used to transport items.

Redstone components

See redstone circuits for an overview of simple components and advanced redstone circuits for more complicated redstone mechanisms.

Mechanisms

Mechanisms are useful devices made from the combination of components. Here are some examples:

Minecart storage system

This is a storage system that allows a user to call a minecart and return them.

YouTube Video (view on YouTube (https://youtube.com/watch?v=1lQYc3luL1E)) [show]

Potion dispenser

For this device, you can stand on a pressure plate and make splash potions shoot out of a dispenser. See the following steps for how to make it:

1. First, make a dispenser dispense splash potions. Then, place a dispenser one block over the floor level.
2. Place a fence on the side from which the dispenser shoots out the potion. Finally, put pressure plates on top of the fence.

See the following video for a better demonstration:

YouTube Video (view on YouTube (https://youtube.com/watch?v=ziGhiF2TvTQ)) [show]

Vending machine

This is a customizable vending machine that is relatively easy to make. Unfortunately, it does require a lot of iron.

Vending machine

Notes:

1. The leftmost top hopper in the side view is the "input/output" hopper. Put items into this hopper and get items out.
2. The droppers hold the "purchase" items.
3. The chest at the bottom collects the "payment" items.
4. Fill the leftmost bottom hopper with 19-<*price*> items in the first slot, and 1 in each remaining slot. These items are payment items.
5. Repeat the upper-right 2 tall by 4 wide section upwards to add more items to the number purchased. (The number of droppers is this number.)
6. Delay the signal from the redstone torch to the hopper by 4*(*price*)-5 ticks (if the price is 1, simply don't delay it). The repeater here is showing 1 tick as an example.

Hidden floor staircase

This is fairly easy to make. Below the floorboard's blocks, you put a face-up sticky piston that is powered when off, done by a redstone torch, and then the next block in the floor has a double-piston extender, also powered when off, and then a triple piston extender, and so on, so when the sticky pistons are powered off, then the blocks are pulled down into a staircase.

YouTube Video (view on YouTube (https://youtube.com/watch?v=OYPe1IimPKQ)) [show]

Hidden wall staircase

This design features a hidden staircase in the wall, revealed by triggering a redstone signal in some way, such as interacting with a lever or button. There are many ways of making this. Look at the following videos for some examples:

YouTube Video (view on YouTube (https://youtube.com/watch?v=Fd1XmabZqzc)) [show]

YouTube Video (view on YouTube (https://youtube.com/watch?v=hgSRdKqmZ2s)) [show]

Rapid pit bomber

To make this design, make a dispenser attached to a redstone clock mechanism and hopper to feed it items. In front of the dispenser, place a powered rail on a block of redstone and fill a chest above the hopper with minecart with TNT. This rapidly dispenses those TNT minecarts onto a powered rail and into a massive crater of their own. It can even tunnel down to bedrock given enough carts.

Programmable item store

This system lets you program what items you want to sell, how many you give, what you want to be paid, and how many of those to be paid. It locks when it's empty. This is a compact system that is also tile-able.

YouTube Video (view on YouTube (https://youtube.com/watch?v=cdj1ot1NJZM)) [show]

Two wire control

With a lot of repeaters and AND-gates it is possible to control multiple outputs with only two wires. It can be very tricky to get the timing right. You need a pulse generator in both wires to get a pulse with a defined length and in most cases, the output pulse needs to be made longer. As shown in this video you have a top wire and a bottom wire with repeater. On one side you have repeater between the buttons on the top wire and none (or as needed) in the bottom wire. On the other side none (or as needed) on the top wire and matching repeater (to the other top side) on the bottom one. between which you place AND-gates (matching the buttons). The idea is that the signals meet at one AND gate at the same time. Video tutorial:

YouTube Video (view on YouTube (https://youtube.com/watch?v=NW75acQqH7Q)) [show]

Example use:

YouTube Video (view on YouTube (https://youtube.com/watch?v=ERBIU8yDza8)) [show]

Piston doors

Main article: Tutorial:Piston doors

1×2 flush with the wall piston door. Fitting in a 2×4×4 space.

YouTube Video (view on YouTube (https://youtube.com/watch?v=zlX3DwVldF0)) [show]

1×2 Hidden Piston Door

YouTube Video (view on YouTube (https://youtube.com/watch?v=rwblBWZNxKM)) [show]

These "Jeb doors" can also be referred to as flush-inset piston doors. Here is an example of one of these, with a redstone torch key system added on. Once broken down, it's not extremely difficult to build.

YouTube Video (view on YouTube (https://youtube.com/watch?v=L-lAd4Veuml)) [show]

For an easy piston door with no sticky pistons:

YouTube Video (view on YouTube (https://youtube.com/watch?v=Ja7xJ_F12b4)) [show]

Piston One-Way Elevators

5x4

YouTube Video (view on YouTube (https://youtube.com/watch?v=unf_Kj9SxY4)) [show]

This design allows one to get a great view on the surroundings and enables you to connect and stop on any floor you want. The video also contains horizontal piston transport.

4x4

YouTube Video (view on YouTube (https://youtube.com/watch?v=YB-LdSbshPg)) [show]

or

YouTube Video (view on YouTube (https://youtube.com/watch?v=1bVYdqvKF7M)) [show]

This design is even more compact than the previous one; however, it blocks sight. It's great for

building elevators in shafts. Note: you need to set the pistons to 3 instead of 2. The first is still to be set on 4.

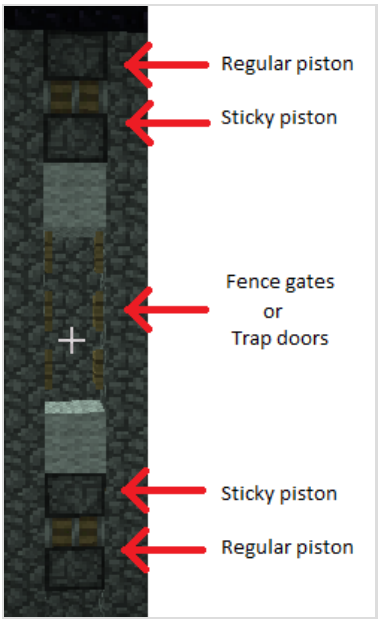
Piston Two-Way Elevators

Two-way elevators can be built, but they are slower and much more complex than the previous ones. They also require a lot more space and resources.

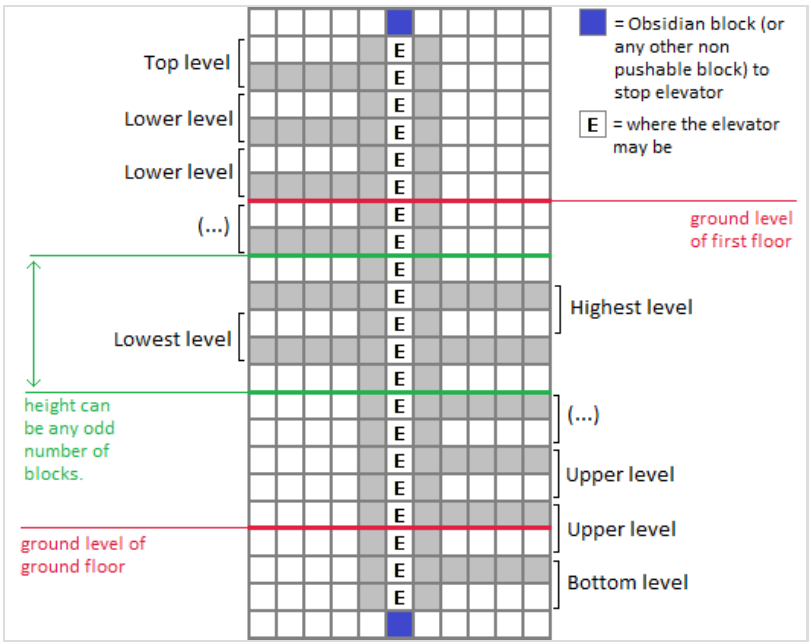
YouTube Video (view on YouTube (https://youtube.com/watch?v=cix161oQWGA)) [show]

The two-way elevator can be built the following way:

The engine shown below of this text uses wool between the pistons and the fence gates/ trapdoors. However, instead of wool any other block can be put there, as long as pistons can push it.



The engine



Front view schematic of the elevator

The schematics for the wiring assuming that you know how to make a 1 tick long impulse. A 1 tick long impulse can be obtained using a pulse limiter. In both of the schematics, empty squares represent air blocks, and repeaters all have the minimum delay possible.

Schematic to make the elevator go down [show]
Schematic to make the elevator go up [show]

A screenshot of an implementation of this design:

Screenshot of a two-way elevator using this design

Also, see this video for a larger two-way elevator:

YouTube Video (view on YouTube (https://youtube.com/watch?v=zLWv0yxh7ic)) [show]

Quick & safe item incinerator

Quick item incinerator (view on YouTube (https://youtube.com/watch?v=U-EBsP_YNgI)) [show]

Compact block swapper

This section is missing information about: Needs new video
Please expand the section to include this information. Further details may exist on the talk page.

This is a quick video tutorial on how to make a compact block swapper.

Bank system

This is a simple bank system using powered rails, which should be helpful for Minecrafters less experienced with redstone.

YouTube Video (view on YouTube (https://youtube.com/watch?v=EV2RBXmILCY))
[show]

Detecting redstone placement

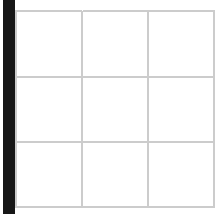
This section is missing information about: Needs new video
Please expand the section to include this information. Further details may exist on the talk page.

This silent BUD switch design updates not only when there is an update going on adjacent to it, but also updates when there is redstone wire placed 1 block away from the BUD switch.

One-Way Redstone Pulse

This is intended to be used in narrow passageways. Since a piston takes 1 tick to extend, you can make a tiny monostable circuit that is activated by a pressure plate. Then, place a sticky piston with a block attached one block away from the monostable circuit, in which the sticky piston is connected to another pressure plate, one block away from the other. Then connect the blocks on the bottom layers with repeaters. The output is the block that is pushed by the sticky piston. The output is on when a player walks from one pressure plate to the other, but only in one direction. In the diagram, it looks like this (the inputs are below pressure plates):

This is the in-game build, which is very simple.



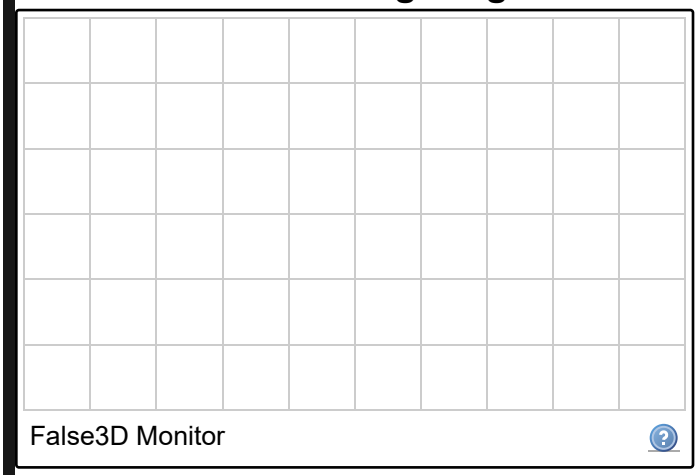
Self-destructing mechanisms

Self-destruct mechanisms are useful when destroying critical buildings or creating secret areas.

- Lay TNT under critical areas of your base, about two blocks deep. This prevents torches and other redstone contraptions from detonating your system early. Then, lay TNT to the surface in a 1×1 area and add a lever or button above it to complete the basic self-destruct system.
- In creative mode, one could use dispensers filled with enderman spawn eggs wired to a 5-clock redstone circuit to release endermen into your house, slowly assuring a semi-complete destruction of your base provided that it is made from blocks that enderman can manipulate.
- Remote dispensers could be wired to release fire charges upon your wood structures.
- Pistons could be placed to release the floor below sand walls to quickly remove the walls of a structure. This can also be done by supporting the sand with scaffolding and breaking the main support scaffolds with pistons.
- A dispenser with a lava bucket could be used to flood your base with lava.

- Connect a mob farm to your base, and open it up. The mobs cover your house. Creepers detonate whenever anyone unwanted comes by, and the other mobs fight and probably kill any intruders.
- Use command blocks to really wreak havoc upon any sensitive areas. Use commands such as /fill, /summon PrimedTnt, or if you're really thorough, use /summon ~ ~ ~ wither. WARNING: These methods destroy your base and anything near it.

Redstone False-3D Lighting Monitor



False3D Monitor

This is the False3D Monitor, if you place a second row of sticky pistons above the first row you can produce 2×2 pixels. To complete the look of the monitor, you need to place blocks in front of the sticky pistons to determine what color the pixels are, example: wool. This happens because when the sticky piston pushes the "pixel block" and then the shading and the 3D cause the pixel to be visible by the player(s). This can generally be used for any purpose regarding visuals, it can also be used for a mob trap if used properly.

Redstone lamp floor

A redstone wired sequence of redstone lamps to mimic the lighting of a working floor. It is pretty easy and very good looking.

YouTube Video (view on YouTube (https://youtube.com/watch?v=4x-spTuaxqE)) [show]

Nether Basalt Bridge Builder

A compact "flying" machine to make a thin basalt bridge across a lava lake.

YouTube Video (view on YouTube (https://youtube.com/watch?v=RUvl8KVhUJY)) [show]

See also

- Mechanics/Redstone/Circuit
- Traps

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