

## Spring-loaded latching mechanism

 **ConceivablyEngineering**

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### Summary

This is a spring-loaded latching mechanism for a broad variety of applications. It is inspired by a slam latch (normal...

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This is a spring-loaded latching mechanism for a broad variety of applications. It is inspired by a slam latch (normal door, some car doors etc.). However, you CANNOT slam this one. You need to press the pins to release the connection AND to make it.

Use:

You attach the cage (with pins and spring inside) on one side and the anchor on the other side (i.e. box and lid). At a scale of 100% the screw holes fit M3 screws. By pressing the two pins deeper into the cage you load the spring and open the connection. By releasing the pins the mechanism closes and the spring unloads. The force of the spring is enough to hold the components in place and the connection secure. I have no data on the mileage of the spring, but it seems to be holding up well. And again: slamming the parts together will not make a connection. You need to push the pins.

## Printing:

I printed at 100% and 66,66% (see photos). At a scale of 100% the wall thickness is a sturdy two to three millimeters. Anchor, pins and cage are straightforward prints, no special attention required. Maximum bridging is between 7 and 8mm. Most printers should be able to handle that. (If not, possible fixes: slower print, thinner layers, more cooling)

However, the spring is a bit tricky: it needs to be printed solidly by increasing the wall thickness in your slicer (>3mm). Print slowly for best results.

Print all parts with 0,1 (spring or others scaled down) or 0,15 (others) mm layer height.

## Post-processing:

Make sure you remove all remainders of a brim (if you used one, it is not necessary) and the first layer squish for the mechanism to work perfectly.

For the spring: Take the spring and slowly compress it to the minimal form. Repeat a few times. If it breaks, tweak print settings. If it holds, assemble it.

## Benefits of this model:

- Fully 3D-printed
- allows multi-color assemblies
- relatively easy print
- no support or printbed-adhesion necessary (normally)

## Drawbacks of the model:

- applicable force depends on the scale
- risk of components not aging/wearing well

Another, perhaps studier latch can be found here: <https://www.thingiverse.com/thing:3969571>

Designed with FreeCAD, quickly rendered with CADRays.

Conceivably Engineering - Little competence, big smiles.

## Print Settings

### Printer:

FLSUN QQ-S

### Rafts:

No

**Supports:**

No

**Resolution:**

0,1-0,15

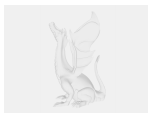
**Infill:**

30%

**Filament:**

Creality Yellow, Basicfil Black PLA Category: Parts

## Model files



**large\_display\_spring-loaded\_latching\_mechanism\_ca.stl**

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**spring-loaded\_latching\_mechanism\_pins.stl**

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**spring-loaded\_latching\_mechanism\_spring.stl**

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**spring-loaded\_latching\_mechanism\_cage.stl**

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**spring-loaded\_latching\_mechanism\_anchor.stl**

[Find source .stl files on Thingiverse.com](#)

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