

Fidget Spinner / Simplicity Wins

MDL-SPINNER-001 / REV A / 2026.09.15

I wanted something that would spin freely and keep going after a flick. That small goal led through Shapr3D extrusion controls, smooth connecting arcs, bearings that felt stiff, and a question about putting N52 magnets around a printed housing. The result on the workbench is a white, three-lobed spinner with four bearings. The useful part of the project was working through those questions and coming back to a simple object I could actually make.

STATUS	BUILT / PHOTOGRAPHED
CLASSIFICATION	MDL
MATERIAL	3D-PRINTED BODY / FOUR BEARINGS
DISPOSITION	PUBLIC BUILD / PHOTO + ORIGINAL STL
CATEGORY	Making / Printed Mechanisms
RECORD TYPE	build-post

TECHNICAL NOTES

A three-lobed spinner, four bearings, and a lesson in keeping the mechanism simple. Shapr3D modeling notes, a magnetic detour, the finished print, and the original STL.

GOAL

Make a simple bearing-based spinner and preserve the modeling lessons and questions along the way.

BUILD STORY

The theme for this build is simplicity wins. A small printed mechanism gave me a reason to learn a few CAD controls, question the bearing resistance, and follow a tempting magnetic idea far enough to understand its limits.

First, make the material join. In Shapr3D I wanted to extrude a circle downward to create a connection, but the operation was subtracting material. The useful control was the Boolean badge beside the extrusion distance: choose Union when the intent is to add the extrusion to the existing body. It was a small interface detail with a large effect on what the model became.

Then make the circles feel like one shape. The sketch had a central ring and three rings around it. I marked the connections I wanted in red: inward curves between the outer circles. The advice was to start with a 3-Point Arc, keep each endpoint coincident with its circle, and make the arc tangent to both circles. Coincident keeps the endpoint attached; tangent makes the transition smooth. The endpoints need room to slide while

those constraints solve. Those notes explain the approach discussed, while the screenshot preserves the shape I was aiming for.

The bearings raised another question. The new bearings felt a little stiff, so I asked whether WD-40 would help. The discussion redirected attention to the source of the drag: grease, seals, an overly tight printed pocket, or a surface rubbing after assembly. A useful check is to compare the bearing before and after fitting it. The conversation did not establish that I changed the lubricant or measure how much resistance came from the housing.

Then came the magnetic detour. What if N52 magnets sat in pockets around a PLA bearing housing? I wanted the spin to last longer, and magnets snapping together or pushing apart made it feel as though there ought to be something useful there. The discussion separated a magnetic push from a continuing source of energy: a fixed arrangement may help during one part of the rotation and resist during another. Resetting an attracting or repelling arrangement takes energy. Simply arranging magnets around a bearing does not supply a new push on every revolution.

There was still an interesting experiment to keep. Magnets can support some of a rotor's load in a suitable arrangement, reducing what the bearing has to carry. That is different from expecting a steel bearing to repel a magnet, or expecting magnets fixed inside one housing to drive that same housing around. A removable magnet setup and repeated comparisons were suggested. No such comparison is documented here, so the magnetic idea remains a question for another test.

Back on the workbench, the result is straightforward: a white printed body, three rounded lobes, and four bearings. The photo gives the CAD discussion a physical ending. The STL keeps the shape available for the next attempt. Simplicity wins here because the project has reached an object I can hold and examine; the more elaborate ideas can wait until there is a useful measurement to compare them against.

RESULT / WHERE THIS STANDS

A printed spinner with four installed bearings is documented in the supplied photograph. The original model is available below. Spin duration, bearing fit tolerances, and any benefit from magnets have not been measured in this record.

SPECIFICATION

BUILD TAG	Simplicity wins
LAYOUT	One central bearing position / three outer lobes
OUTER SPACING	120° / bore centers 26 model units from the center
MODEL ENVELOPE	70.03 × 64.00 × 4.98 model units
BORES IN STL	Four / approximately Ø12.62 model units
UNITS	STL is unitless; these values are millimeters only if imported as mm
MATERIAL RECORD	PLA discussed for the housing; final filament and print settings not recorded

BEARING IDENTITY	Four installed in the photograph / exact specification not recorded
ORIGINAL FILE	Binary STL / 226,746 triangles / 11,337,384 bytes
BEFORE PRINTING	Check scale and slicer repair/preview; original mesh contains internal nonmanifold faces
PERFORMANCE	No measured spin time or magnets-on/magnets-off comparison recorded

DEVELOPMENT HISTORY

2026.09.15 / A

Brought together the extrusion and bearing discussion, the magnet experiment discussion, and the connecting-arc sketch as one build story. Added the supplied photograph and original STL.

RELEASED MATERIAL / SOURCE LINKS

fidget-spinner-finished.jpg

FINISHED BUILD / White printed spinner with one central bearing and three outer bearings. Supplied workbench photograph.
<https://u225x.com/uploads/fidget-spinner/fidget-spinner-finished.jpg>

shapr3d-connecting-arcs.png

DESIGN IN PROGRESS / The red strokes mark the intended connections between the outer circles in Shapr3D.
<https://u225x.com/uploads/fidget-spinner/shapr3d-connecting-arcs.png>

Fidget Spinner.stl

ORIGINAL STL / Download preserved as supplied; check scale and mesh repair in your slicer.
<https://u225x.com/uploads/fidget-spinner/fidget-spinner.stl>

fidget-spinner-build-notes.txt

BUILD NOTES / STORY, MODEL CHECK, AND SOURCE LINKS
<https://u225x.com/uploads/fidget-spinner/fidget-spinner-build-notes.txt>

fidget-spinner-build-report.pdf

BUILD REPORT / PRINTABLE U225X RECORD
<https://u225x.com/record/MDL-SPINNER-001/pdf>

Extrude Circle Union

SOURCE / SHARED CHAT: JOINING THE BODY AND STIFF BEARINGS
<https://chatgpt.com/share/6aa9e9c7-faf8-83ea-9e1e-c72ad0d1ef23>

Magnetized Ball Bearing Effects

SOURCE / SHARED CHAT: MAGNETS AND LONGER SPIN
<https://chatgpt.com/share/6aa9e9a9-9e5c-83e9-8969-186f9df6cf65>

Shapr3D Extrude

REFERENCE / EXTRUSION AND BOOLEAN ACTIONS
<https://support.shapr3d.com/hc/en-us/articles/7874453786908-Extrude>

Shapr3D Tangent

REFERENCE / SMOOTH CONNECTIONS BETWEEN SKETCH CURVES

<https://support.shapr3d.com/hc/en-us/articles/9307945448860-Tangent>

CONNECTED RECORDS

MDL-BUBBLE-007

<https://u225x.com/record/MDL-BUBBLE-007>

MDL-DATUM-001

<https://u225x.com/record/MDL-DATUM-001>

RETURN TO THE LIVING RECORD

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This PDF preserves the public notes at this revision. Visit the record for updates and attached images.

<https://u225x.com/record/MDL-SPINNER-001>