

Little Box T-Plans

This is actually the smaller box that fits inside BboxX (see the Gallery Page 6), but it's such a neat little box that it deserves a plan of it's own.

This is a "casket type" puzzle box, and is a good introduction to making those type of boxes, which can get quite complicated. It takes only 11 moves to open, and is fairly easy to make. The size of this box is 3-3/4" by 2-3/4" by 2-3/4" if made from 1/8" wood, but the plans are T-Plans, which allow you to make this at any size.



T represents the thickness of the wood being used.

Inner Box

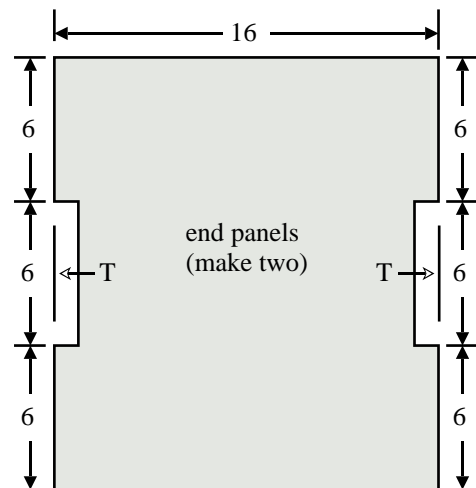
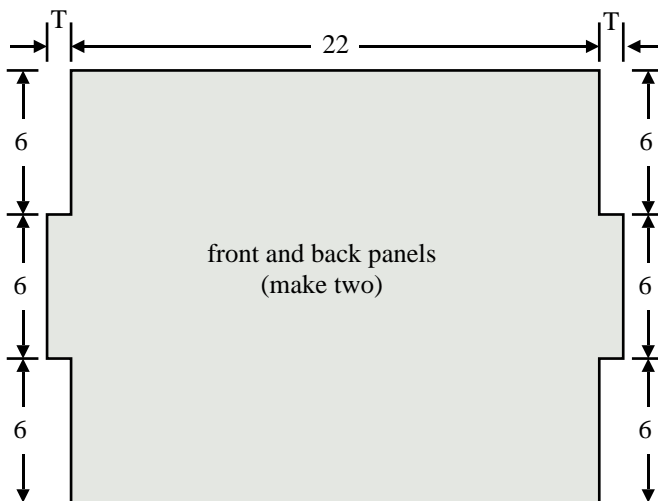
Cut these pieces:

two at 24 by 18: front and back panels.

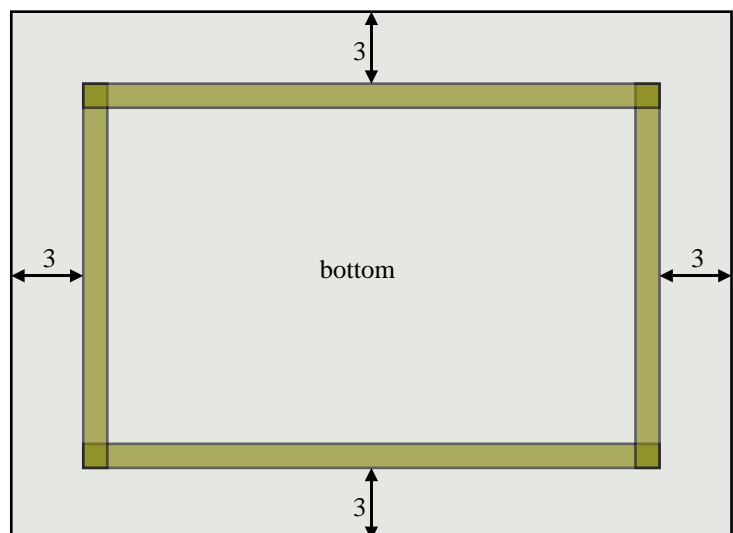
two at 16 by 18: both end panels.

one at 30 by 22: bottom panel.

Cut the side panels to these shapes:



Lightly round off the top edges of the bottom panel. Glue the four sides together, and onto the bottom panel in the position shown. There should be a margin of 3T all around the sides.



What is a T-Plan? See Page 8.

Front Panel

First layer:

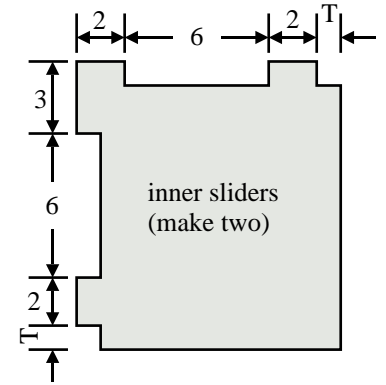
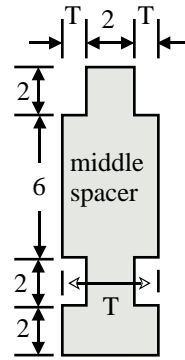
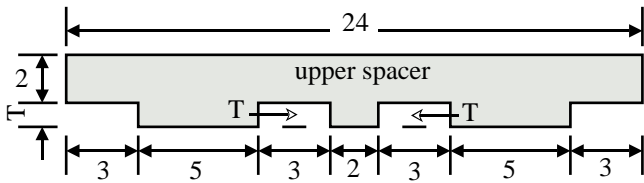
Cut these pieces:

two at 24 by 3: upper and lower spacers.

one at 4 by 12: middle spacer.

two at 11 by 12: left and right inner sliders.

Cut the inner sliders, and upper and middle spacers to these shapes:



Second layer.

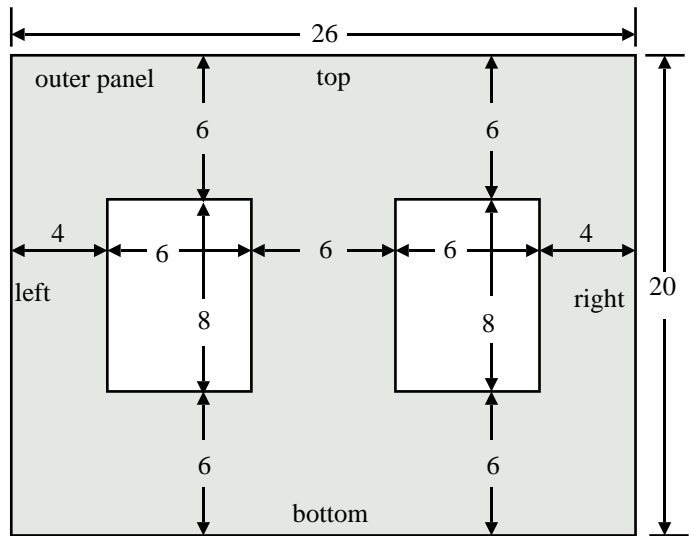
Cut these pieces:

one at 26 by 20: outer panel.

two at 5 by 7: moving spacers.

two at 9 by 12: outer sliders.

Cut these holes
in the outer panel:

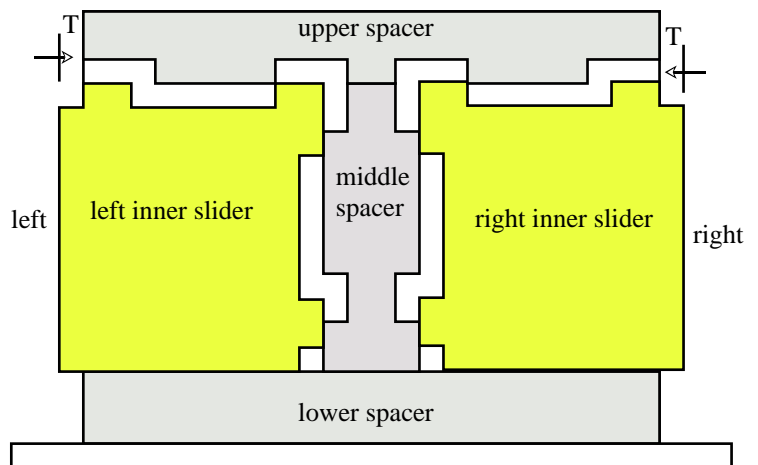


Front Panel Assembly

Glue the upper spacer onto the front panel, flush with the top, and the lower spacer at the bottom. The ends of both spacers should be flush with the left and right panels.

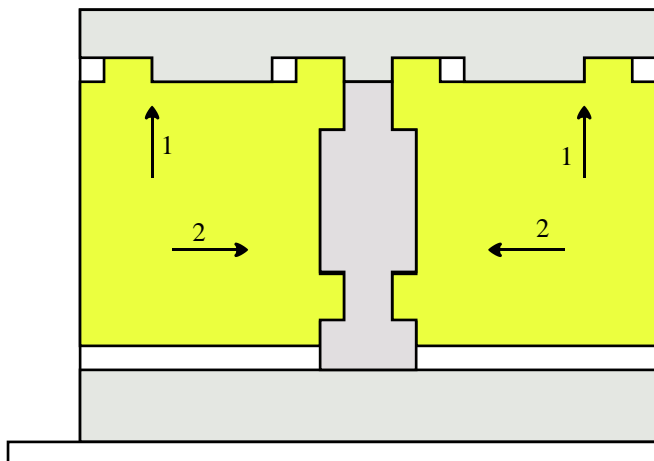
Place the inner sliders into position. Both the outer edges should project a distance of T beyond the left and right panels.

Check that they both can move up, and then towards the middle. The outer edges of both sliders should now be flush with the left and right panels.



front view

Locked Positions



Open Positions

For the time being, leave the outer layer off.

First layer:

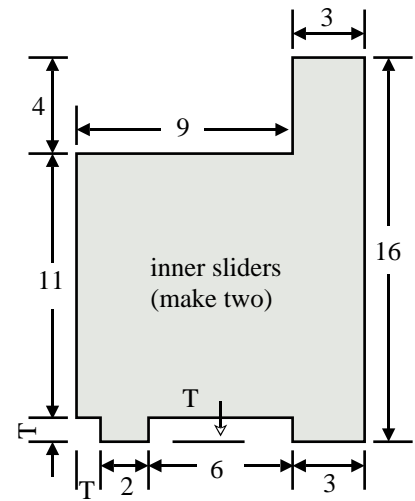
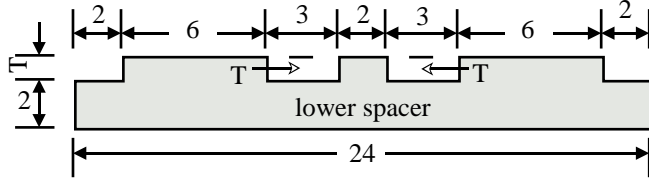
Cut these pieces:

two at 8 by 3: upper spacers.

one at 24 by 3: lower spacer.

two at 12 by 16: left and right inner sliders.

Cut the inner sliders and lower spacer to these shapes:



Second layer.

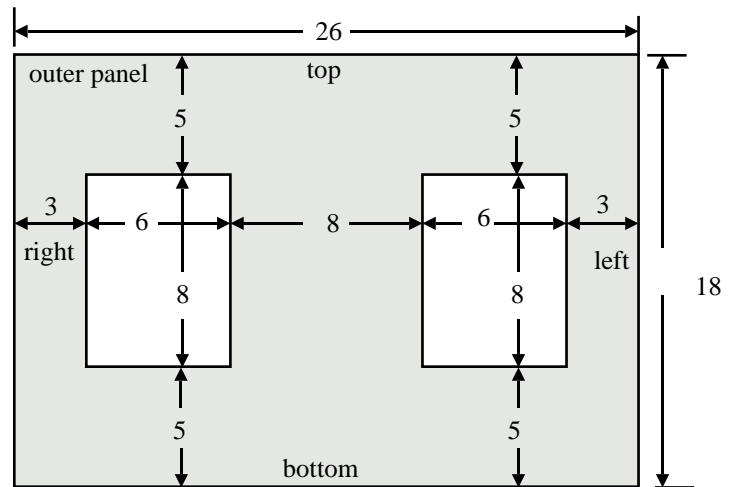
Cut these pieces:

one at 26 by 18: outer panel.

two at 5 by 7: moving spacers.

two at 9 by 12: outer sliders.

Cut these holes
in the outer panel:

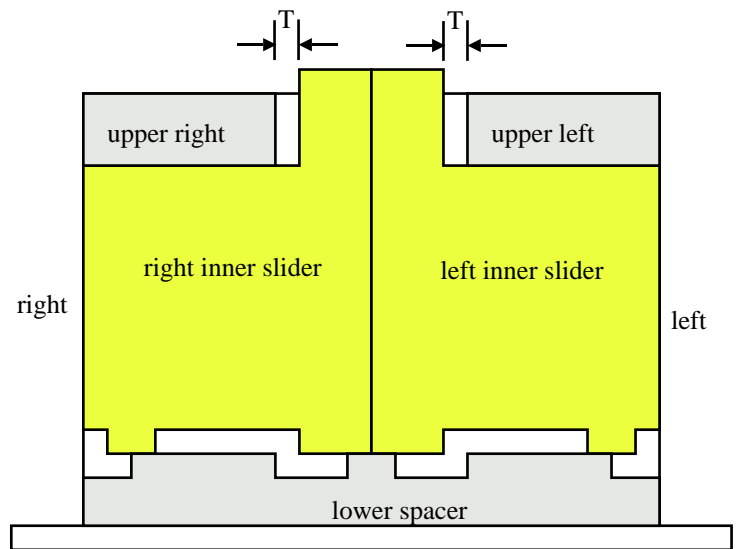


Back Panel Assembly

Glue the upper spacers onto the back panel, flush with the top. The outer ends of both should be flush with the left and right panels.

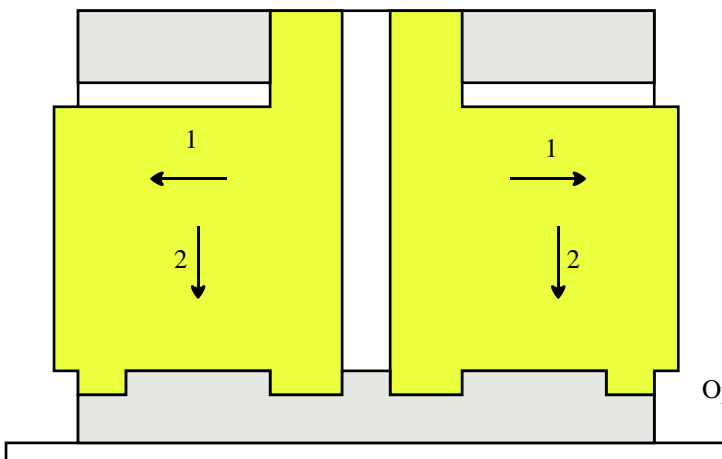
Glue the lower spacer at the bottom, with its outer ends flush with the left and right panels.

Place the inner sliders into position. Both the outer edges should be flush with the left and right panels. Check that they both can move outwards a distance of T, and then downwards, so the tops of the tongues are now flush with the top of the back panel. The outer edges of both sliders should now project a distance of T beyond the left and right panels.



back view

Locked Positions



Open Positions

For the time being, leave the outer layer off.

Both End Panels

First layer:

Cut these pieces:

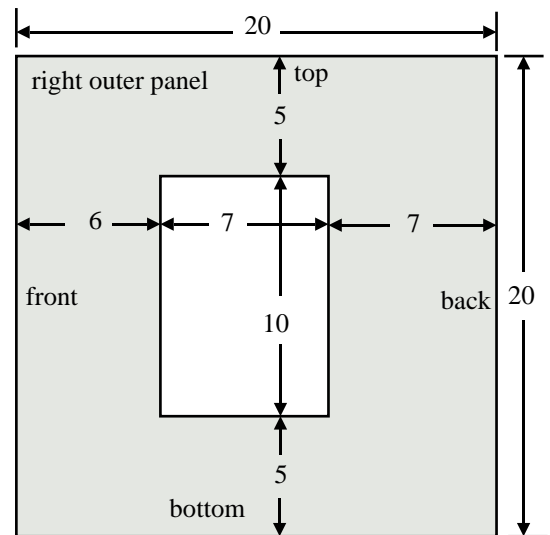
- two at 18 by 3: upper spacers.
- two at 18 by 3: lower spacers.
- two at 17 by 12: inner sliders.

Second layer:

Cut these pieces:

- two at 20 by 20: outer panels.
- two at 6 by 10: moving spacers.
- two at 10 by 12: outer sliders.

Cut these holes in the outer panels. This one is the right outer panel. Flip one over, left to right: that one is the left outer panel.

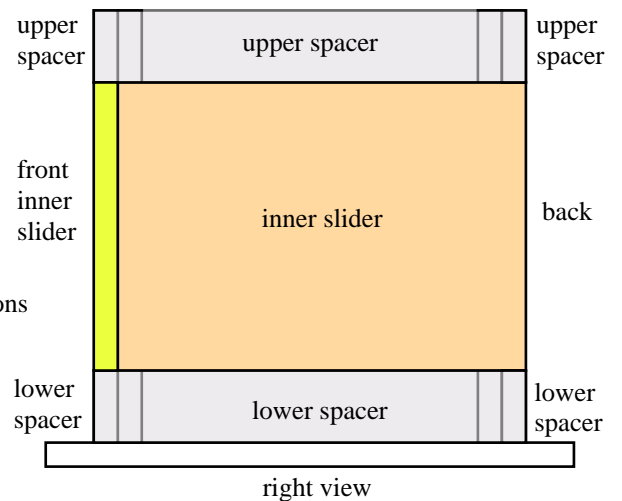
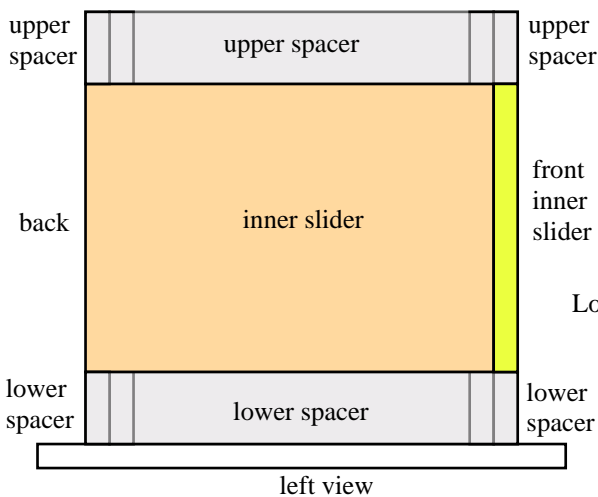


End Panels Assembly

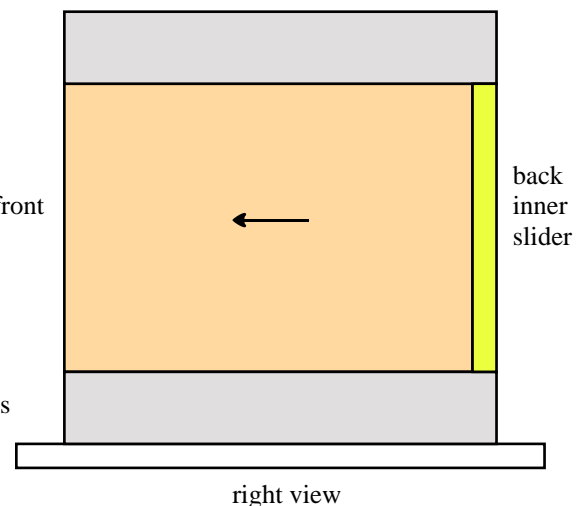
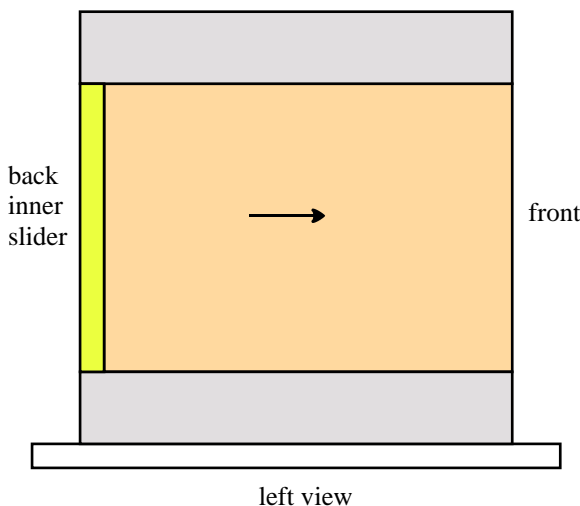
Follow these steps for both end panels.

Glue the top spacer to the end panel, flush with the top of that panel. The ends of the spacer should overlap the ends of the front and back upper spacers.

Glue the lower spacer in place, resting on the base, with the ends overlapping the ends of the front and back lower spacers. Place the inner slider in position so that the back end is flush with the back inner slider. With the front sliders in their locked positions, they should overlap the ends of the end inner sliders.

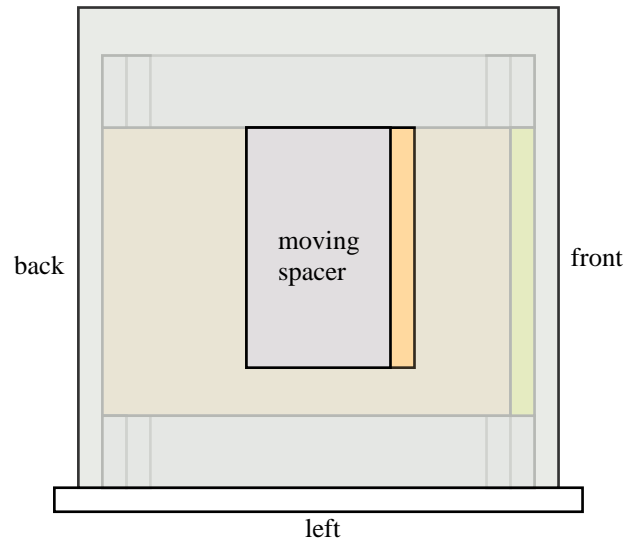
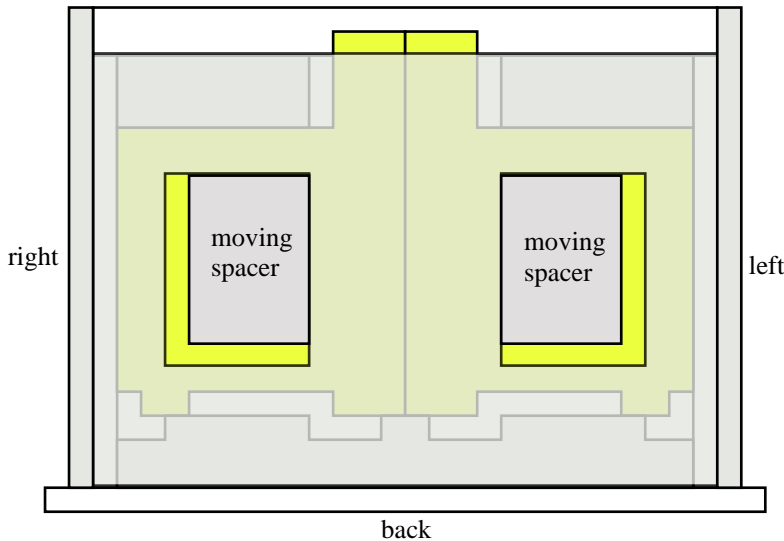
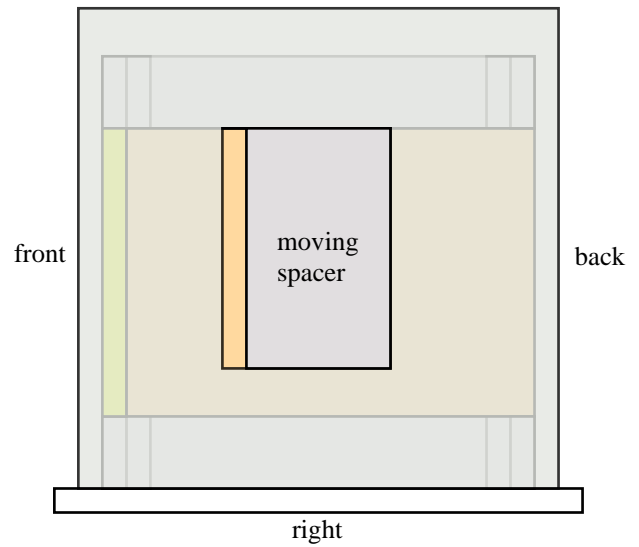
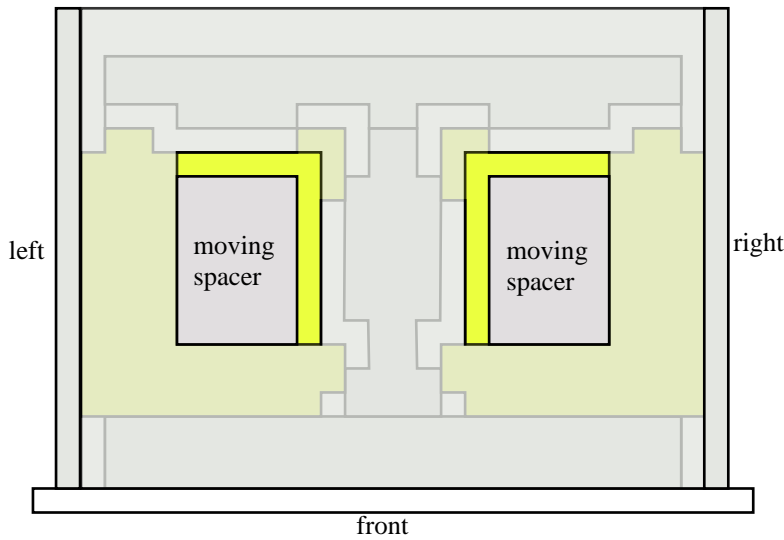
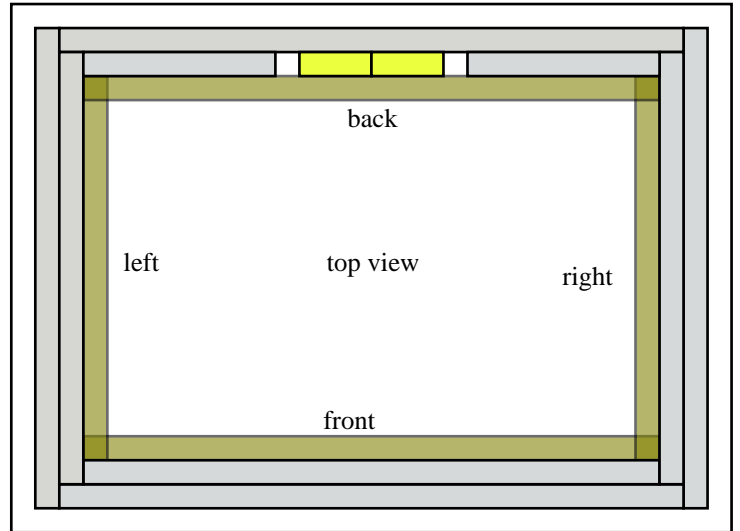


When the front inner sliders are moved to their open positions, the end sliders should be free to move forwards, releasing the back inner sliders.



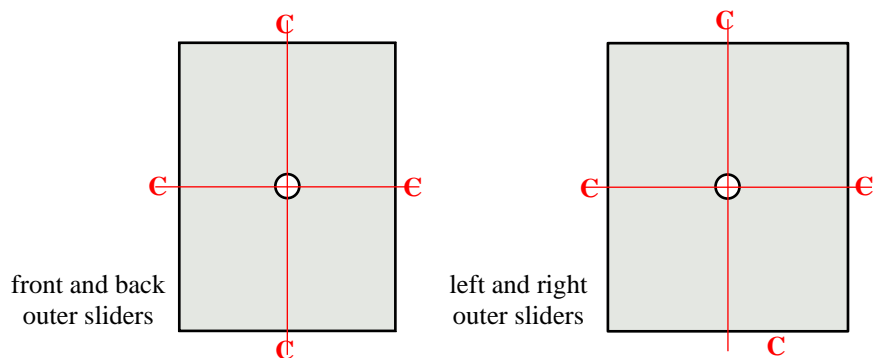
Make sure that all the inner sliders are in their original (locked) positions, and clamp the outer panels in position. The front and back panels should overlap the left and right spacers. The end panels should overlap the front and back outer panels. The front and both end panels should project a distance of $2T$ above the inner panels. The back panel top should be flush with the back inner panel top.

Place the moving spacers into the holes in the outer panels in the positions shown, and glue them onto the inner sliders.

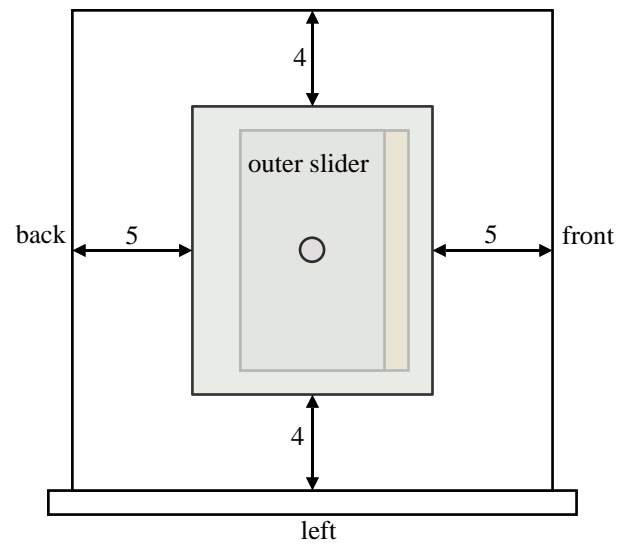
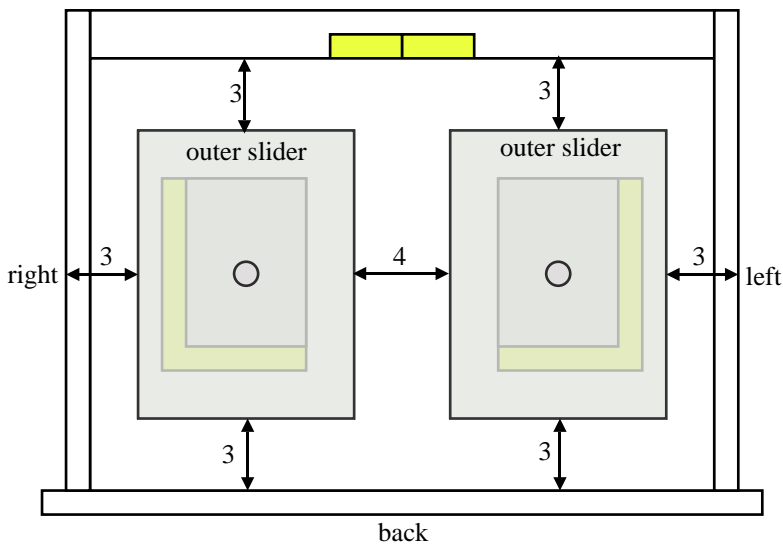
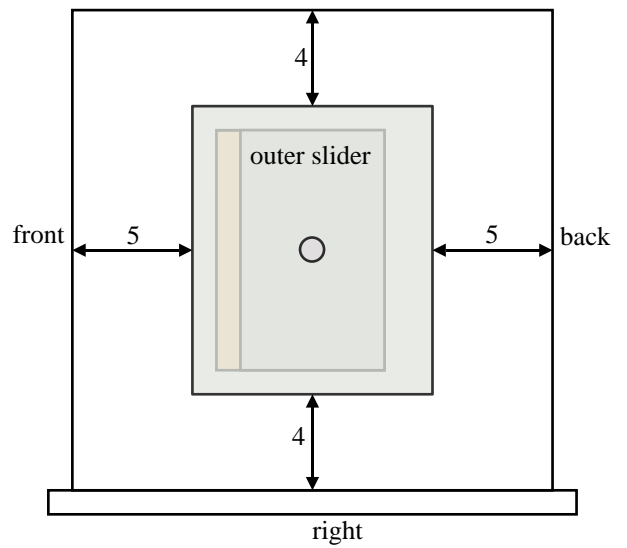
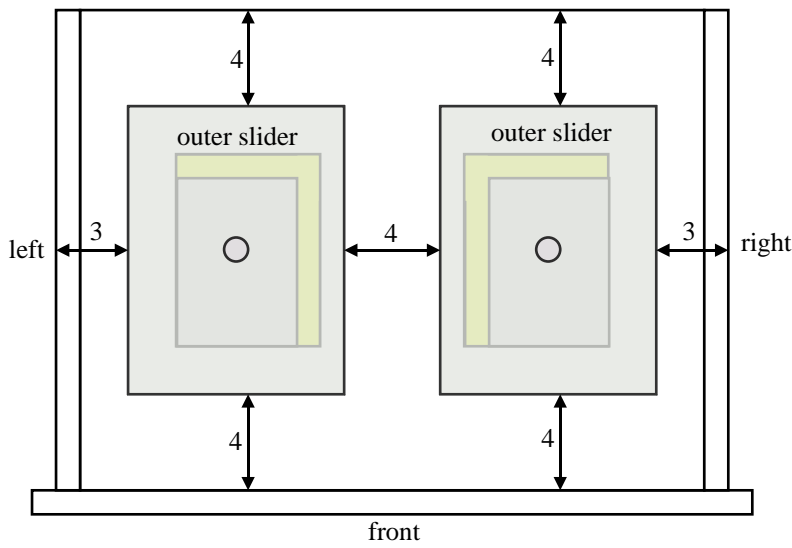


Using a $1/8"$ (3 mm) diameter drill bit, drill these holes in the middle of the outer sliders.

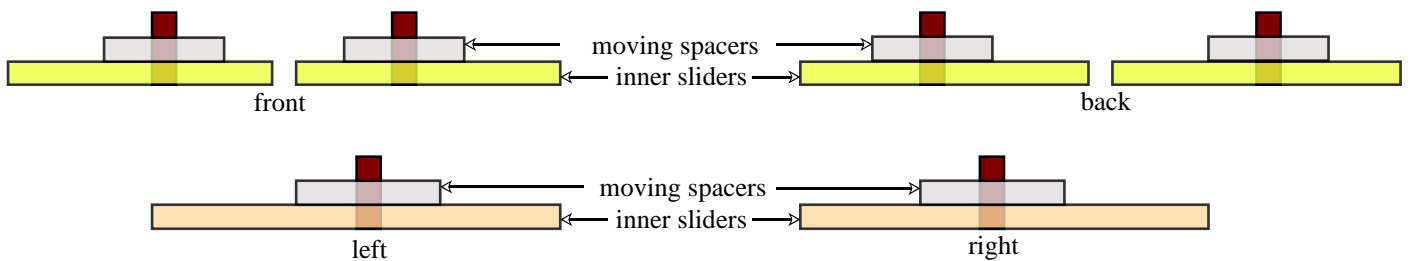
From a $1/8"$ (3 mm) diameter dowel rod, cut six pieces at a length of $3T$.



Place the outer sliders onto their panels, in the positions shown. Using a pencil, or a sharp point, mark the holes onto the moving spacers. Remove the outer sliders and outer panels.



Remove the inner sliders, and using a 1/8" (3 mm) diameter drill bit, continue the hole through the moving spacers and inner sliders. Glue a dowel peg through this hole, so that the inner end is flush with the inside face of the inner slider. The pegs should project a distance of T beyond the moving spacers.

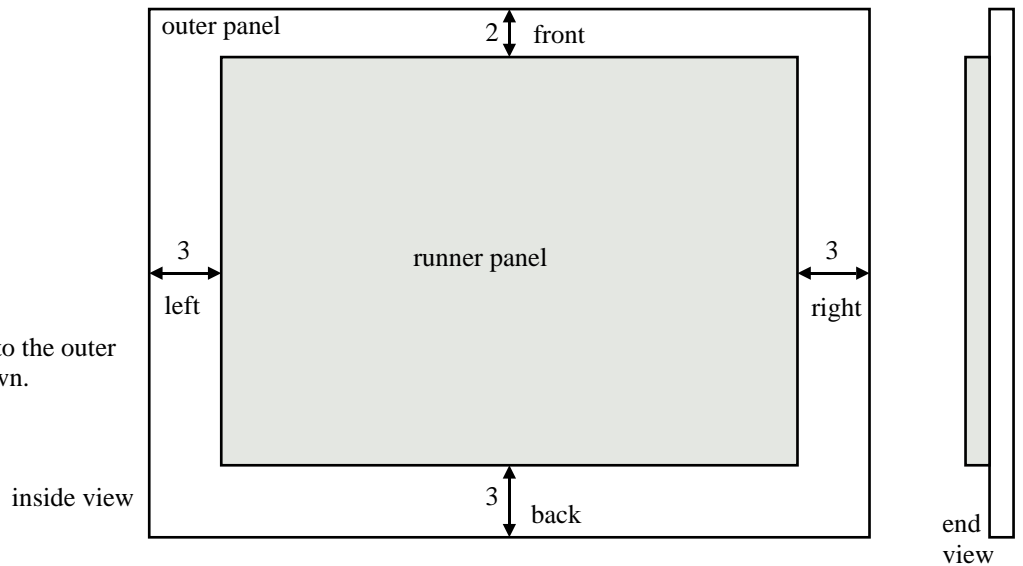


Replace the inner moving parts, and the outer panels. Check that the moving parts can still move. If everything is okay, glue the outer panels in place. Do not glue the outer sliders just yet.

Top Pieces

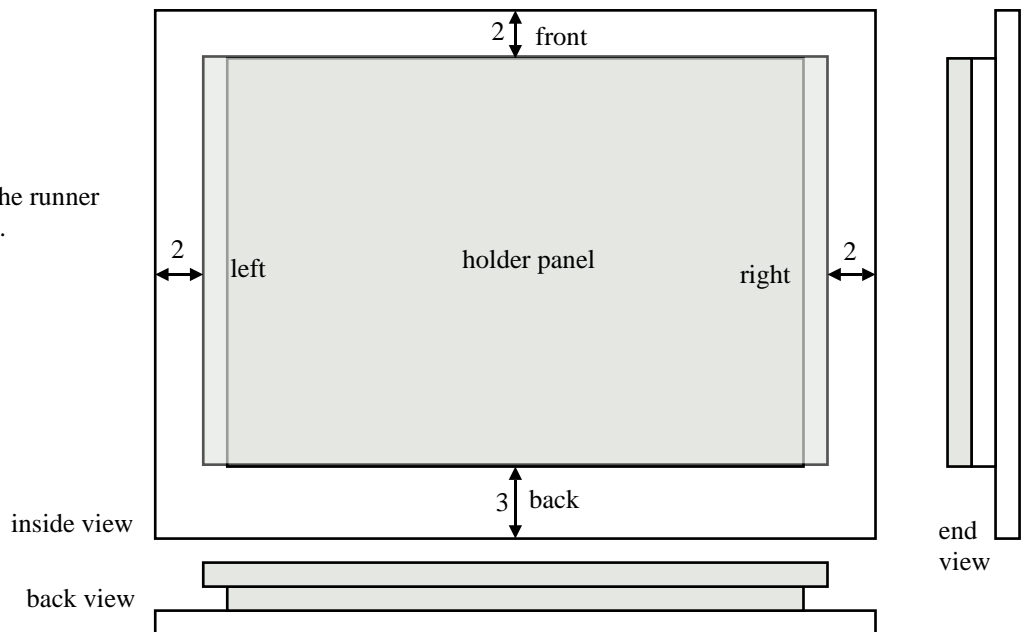
Cut these pieces:
 one at 30 by 22: outer panel.
 one at 24 by 17: runner panel.
 one at 26 by 17: holder panel.
 one at 26 by 2: back skirt.
 two at 9 by 2: skirt supports.
 two at T by 17: rails.

Glue the runner panel onto the outer panel in the position shown.



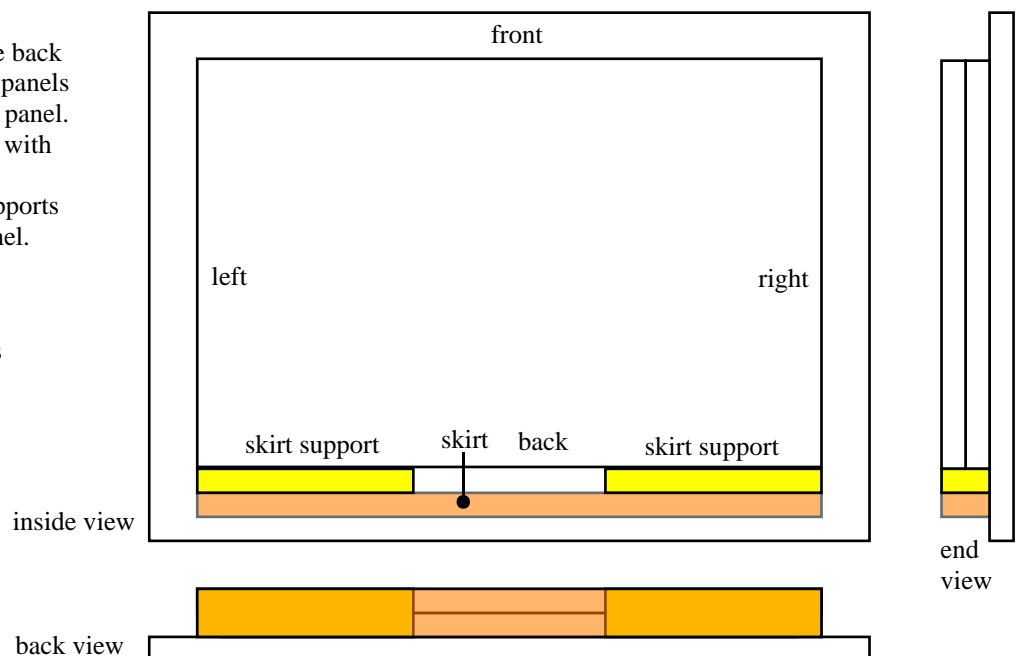
In these back views, the top is upside down.

Glue the holder panel onto the runner panel, in the position shown.

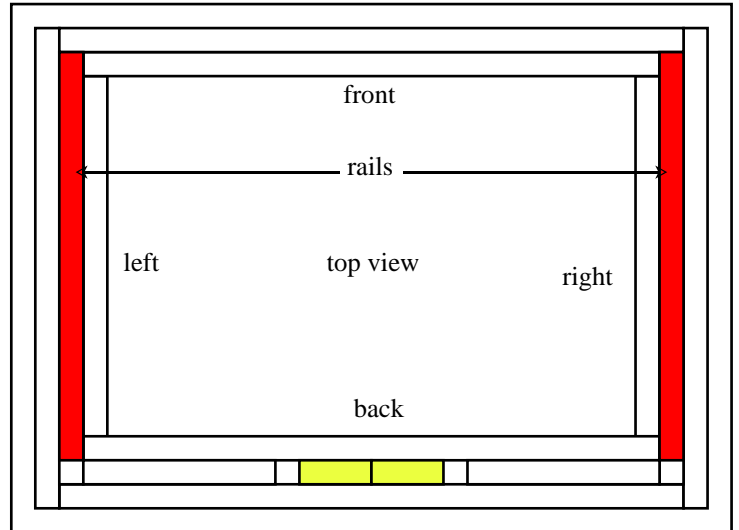
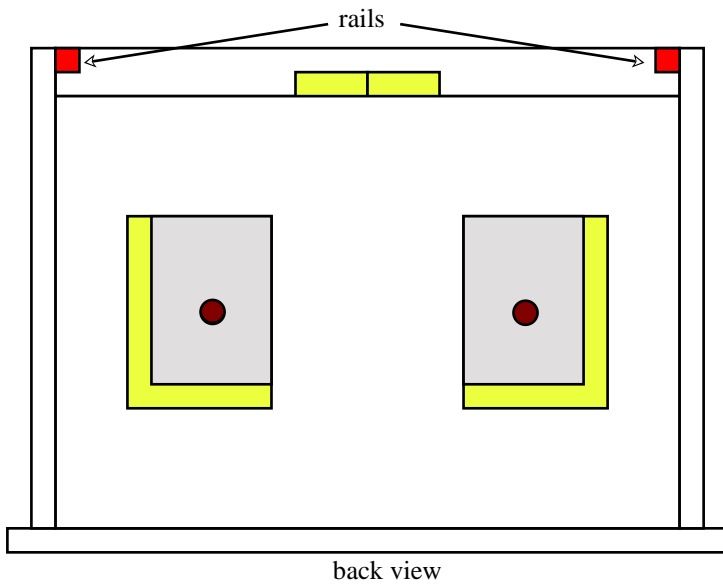


Glue the skirt supports onto the back edges of the runner and holder panels and the inside face of the outer panel. The outer ends should be flush with side edges of the holder panel. Glue the skirt onto the skirt supports and inside face of the outer panel.

Lightly round off the top edges of the outer panel.



Glue the rails to the inside faces of the left and right outer panels, flush with the tops of those panels, and butting against the inside of the front outer panel.



Open all the moving parts, so that the back inner sliders are downwards, and slide the lid on from the back. The runner panel should slide between the rails.

I used a black permanent marker to put a small border around the outer panels, and glued pictures onto them. The pictures on the next page will completely cover the outer panels, so if you're going to put a border on the panels, trim the pictures a little. The black marker pen was used to blacken the edges of the outer sliders, before gluing the small pictures onto them. I glued small pieces of thin card onto the moving spacers before gluing the outer sliders onto them. This helps to prevent the sliders from being too tight. These outer sliders can now be glued onto their respective pegs.

To open the box:
 Front panels upwards, then inwards.
 Both end panels forwards.
 Back panels outwards, then downwards.
 Slide the lid off to the back.



Make some T gauges

Cut twenty pieces of your wood, of thickness T, at about 1" x 1/2".
 Glue ten together, then four, then three, then two.
 These five gauges will give you any size from T to 20T.
 Measure and mark the wood with these T-gauges, **not with a ruler.**

Enjoy this puzzle!

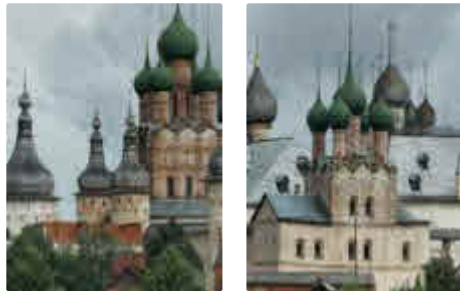
What is a T-Plan?

A T-Plan is a way of showing the dimensions of the parts, which uses the thickness of the wood you are using, rather than an absolute measurement. For instance, if you're using wood which is supposed to be 1/8" thick, and you have to cut a piece 1-1/2" long, and that length includes the thickness of two pieces of wood, then it should be 1-1/4" plus 1/4". If your wood was exactly 1/8" thick, then that measurement would be correct. If the wood was slightly thicker, then the 1-1/2" would be short. If we call the wood thickness "T", then the correct length should be 1-1/4" plus 2 times T (or simply 1-1/4"+2T). Then your piece would be correct length, no matter what the thickness of the plywood actually is.

If you find any mistakes in these plans, please let me know, so that I can correct them.



back



front



left



right



top



If you've made this box at the sizes shown, these patterns will fit each panel. Cut a strip off the top of the back picture, and glue that to the back edge of the top. If you wish to put a border around the pictures, trim around the edges. The smaller pictures will glue onto the outer sliders. Print this page once.