

# *“In the Beekeeper’s Work Shop”*

## *Building a Bee Hive: The Telescoping Hive Cover*

©by Stephen E. Tilmann

## A Telescoping Hive Cover

The telescoping hive cover is what keeps the weather and elements out of your bee hive; it is like the roof of your house (Figure 1). Commercial hive covers typically feature a metal cladding that adds durability and rain-proofing. The metal cover greatly extends the life of the hive cover.

The name “telescoping” derives from the fact that the cover has sides that fit down over the outside of the hive bodies; thus “telescopes” over the top.

The telescoping hive cover is slightly larger than the hive bodies being covered (Figure 2). This allows for ventilation, particularly when using an Imirie shim or a notched inner hive cover. The plans presented here allows for a 1/2-inch overhang, which may be a bit tight for some beekeepers. However, this size makes best use of standard 24-inch aluminum coil stock that is readily available at your local lumber yard.

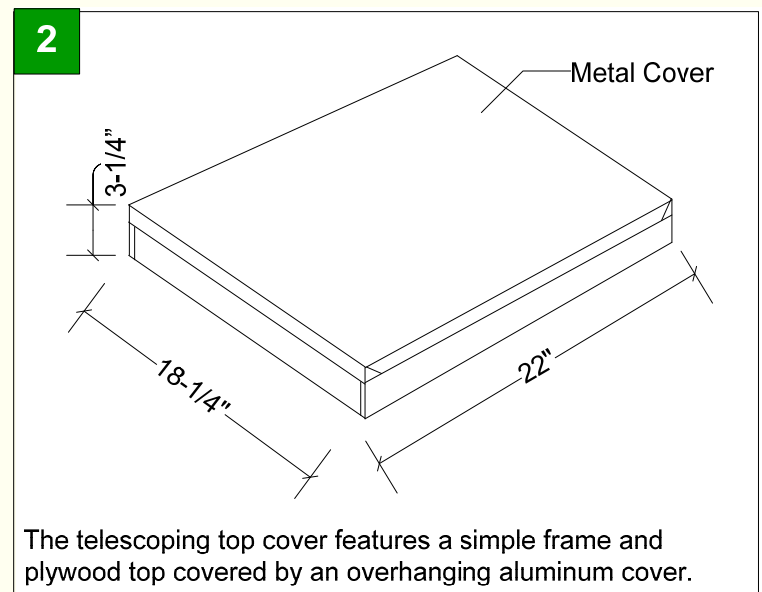
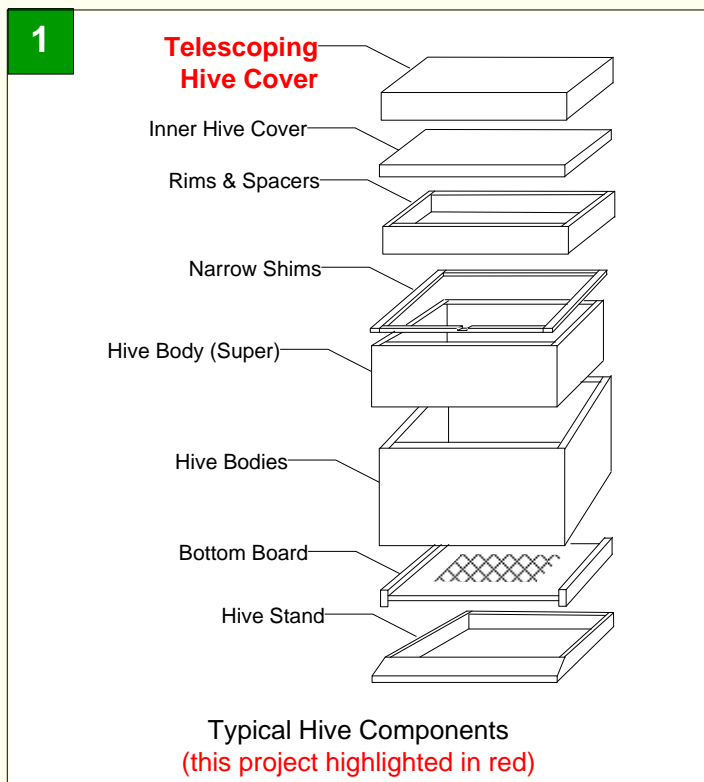
Some shop enthusiasts may be hesitant about a project which requires bending metal for the cover. This is best done with a large “metal brake”, which is a contraption made specifically for bending metal sheets and not the sort of tool most of us have in our workshops. However, a perfectly adequate job can be done using an inexpensive “hand brake” also called a hand seamer (see photo). A hand seamer is essentially a



heavy duty pliers with a wide gripping head. A little practice with a hand seamer and you’ll be making sheet metal bends like a pro!

### **Basic Construction**

The telescoping hive cover is basically a simple frame made from 3/4-inch pine. There is a 1/4-inch cover of plywood or OSB glued and nailed to the top of the frame. Gluing the cover to the frame provides the strength, so a simple butt joint can be used to make the frame. However, in order to minimize exposed end grain, these plans use a rebate joint.



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The metal cover is made from aluminum trim stock. Aluminum is easy to work with and modest in cost. The coil stock comes in rolls (typically 50 feet long), so one roll will probably last you a long, long time. Many lumber yards will cut a roll so you will not have to purchase entire 50 feet of the stuff. How-

ever, you should go for it and consider sponsoring a “day in the workshop” with your local bee club members in order to share the aluminum coil stock and other materials required for this project.

## Before You Begin...

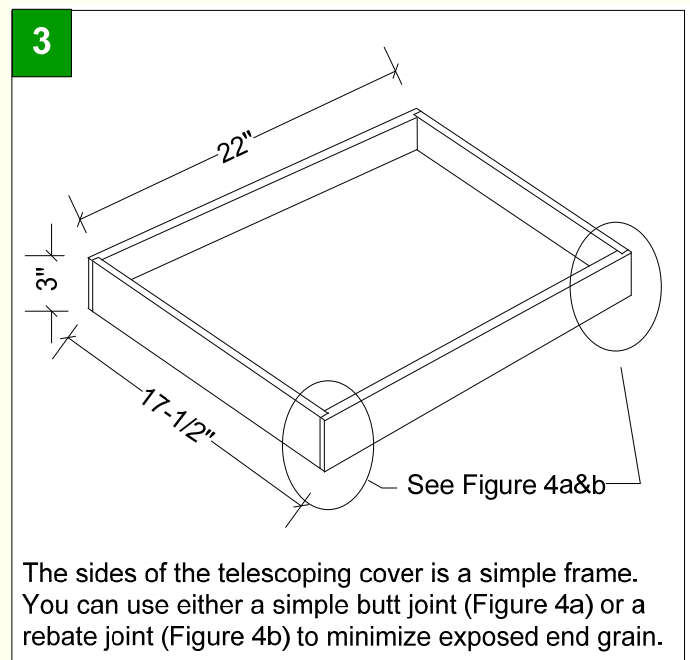
All of the dimensions shown in the drawings and cut list are for a standard 10-frame hive. A table is provided at the back of this article with the sizes of the various components for an 8-frame hive and a 5-frame nuc.

## Construction Details

(For a Standard 10-Frame Hive)

### Step 1. Cut the Frame Sides and Ends

From 1x4 pine, rip two side pieces 22” long and 3” wide and two end pieces 17-1/2” long and 3” wide (Figure 3). Note: if you are using a simple butt joint for the frame (see Step 2 and Figure 4a), then the end pieces need to be 3/4 inch shorter at 16-3/4”.



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### **Step 2. Assemble the Frame**

The easiest method to join the frame is a simple butt joint (Figure 4a). Because the plywood cover will be glued to the top of the frame, the strength of a butt joint will not be an issue.

To minimize the amount of exposed end grain, you may want to use a rebate joint (Figure 4b). This joint only has half the exposed end grain as does the butt joint. Since rot usually starts at the end grain, a rebate joint will prolong the life of the cover. Also, the rebate joint also has more glued surface, so this joint is a bit stronger than a simple butt joint. To make a rebate joint, cut a rabbet on the inside ends of the side pieces  $\frac{3}{8}$ " deep and  $\frac{3}{4}$ " wide.

Which ever joint you use, glue and nail all joints of the frame, checking for square. 18 ga. nails (from a nail gun) work fine. If you are using heavier nails, you may need to pre-drill in order to prevent splitting.

### **Step 3. Make the Plywood Cover**

From a  $\frac{1}{4}$ " sheet of plywood or OSB, cut a piece  $18\frac{1}{4}$ " by 22" (Figure 5). This piece should be the same size as the assembled frame. Glue and nail the cover to the top of the frame.

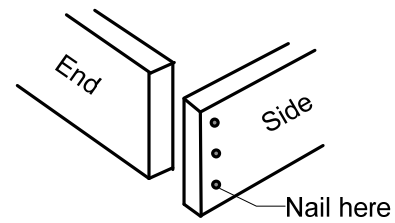
### **Step 4. Make the Metal Cover Piece**

From a roll of 24" aluminum trim stock, cut a sheet 24" by  $20\frac{1}{4}$ ". This is two inches larger than the plywood cover and will allow for a 1-inch skirt around the top of the telescoping cover.

To bend the aluminum, center the cover on the bottom side of the metal so that there is a 1-inch overhang on all four sides. Trace the cover with a pencil; you will bend on the tracing (Figure 6). Then using a hand seamer, start along one edge and gently bend the metal up a full 90 degrees (perpendicular to the sheet). Repeat on the opposite side. Test for fit as you go.

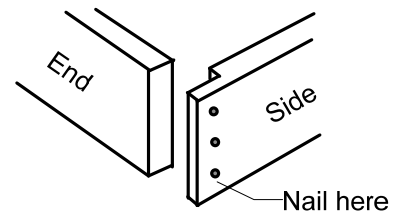
Repeat on the third side. When you get to a corner, continue bending the metal along both edges forming a "V" (or valley) at the corner. Take care to bring the point of the "V" to the exact corner of the sheet.

4a



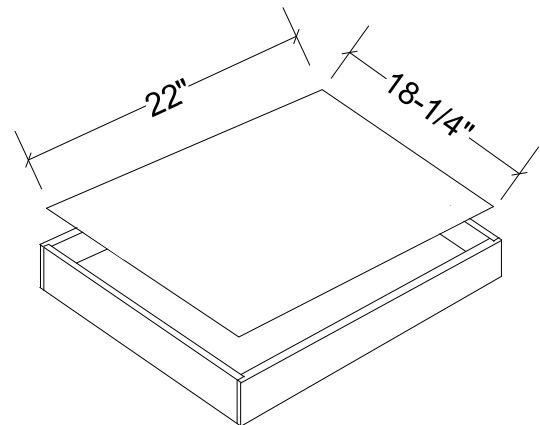
A simple butt joint is sufficient for the frame, however...

4b



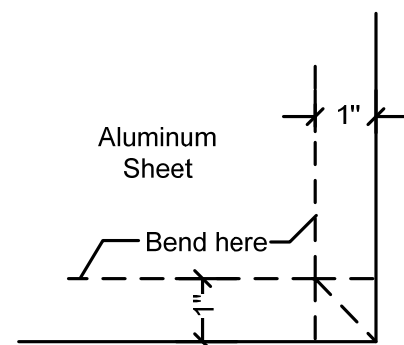
...to minimize end grain, use a rebate joint.

5



From  $\frac{1}{4}$ " plywood or OSB, cut a piece  $18\frac{1}{4}$ " by 22". Glue and nail to the top of the frame.

6



The dashed lines are the bends. Note the diagonal bend from corner to corner.

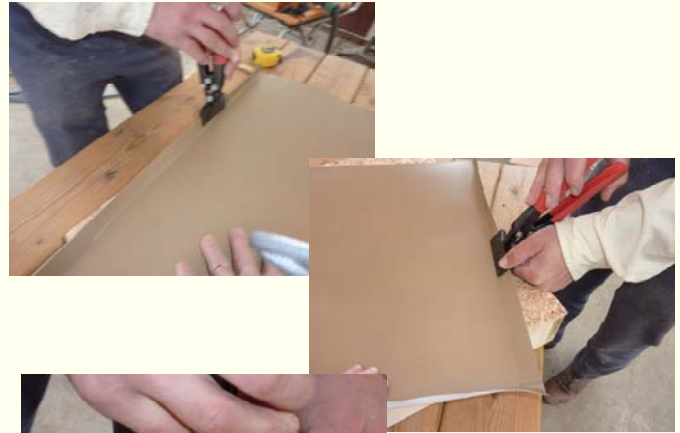
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### **Step 4. Make the Metal Cover Piece (cont’d)**

In the spirit of “a picture is worth a thousand words”, the series of photos at the right illustrate this process. From top, using a hand seamer to make the bend on the first side of the aluminum sheet. Making the bend on an adjacent side. Working carefully toward a corner, you can create a tab which will eventually be folded flat against the edge. The crease should come to the corner of the aluminum sheet. Finally, you can use the seamer to make a sharp corner by pinching the “V” closed. Be sure to test the fit of the metal cover over the wood components as you go.



### **Step 5. Install the metal cover.**

After the metal cover is bent to fit, simply put it over the wood frame and plywood cover assembly and staple to the frame (1/2-inch staples in a staple gun work well). Fold the pinched corners of the aluminum sheet against a side to form a neat, watertight corner (bottom photo to right). You might want to paint the frame assembly before installing the metal cover.

Note: The telescoping hive cover in the photo uses a simple butt joint for the frame and not the rebate joint described in these plans.

### **Step 6. Paint the Completed Telescoping Cover**

We suggest that you paint both sides of the telescoping cover. Use a quality latex primer and two top coats. Don't skimp on the paint job since it will probably be the last time you paint the cover. A good paint job will greatly prolong the life of your equipment.



## **Resources**

Dadant & Sons (1997). *The Hive and the Honey Bee*. Chapter 12.

“Building a Bee Hive” series. Published on-line at [www.michiganbees.org/beekeeping/in-the-beekeeper's-workshop](http://www.michiganbees.org/beekeeping/in-the-beekeeper's-workshop).

For other workshop plans, go to [www.michiganbees.org](http://www.michiganbees.org) and search for “workshop”.

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### List of Materials: Telescoping Hive Cover

#### WOOD

			Reference Figure
A	Frame Sides (2)	3/4 x 3 – 22	3
B	Frame Ends (2)	3/4 x 3 – 17-1/2	3
C	Cover (1)	18-1/4 x 22	5

#### HARDWARE

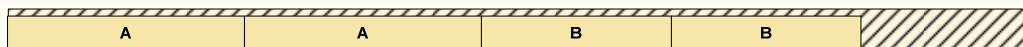
24" x 20-1/4" aluminum trim stock  
 1-1" nails for assembling frame  
 1/2" staples  
 Franklin's Titebond® Glue  
 Paint

### Cutting Diagram: Telescoping Hive Cover

**1 Sheet (48" x 96" of 1/4"- Plywood or OSB)**



**3/4" x 3-1/2" - 96" (1X4 Pine)**



Note: 10 covers (Piece C) per sheet when oriented as shown.

Sizes for Telescoping Hive Cover Components

	Telescoping Cover Size (Assembled)		Frame, Length (in)		Cover (in)	Metal Cover (in)
	Width (in)	Length (in)	A	B	C	
	5 - Frame	11-1/4	22	22	10-1/2	11-1/4 x 22
8 - Frame	15-3/4	22	22	15	15-3/4 x 22	17-3/4 x 24
10 - Frame	18-1/4	22	22	17-1/2	18-1/4 x 22	20-1/4 x 24



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### Photo Gallery...



#### **Photo Captions:**

1. Cover on assembled frame.
2. Gluing the cover to the top of the frame.
3. Nailing the cover to the frame.
4. Using a hand seamer to bend the metal cover.
5. Detail of forming the corners of the metal cover.