Horizontal Hive
You can keep bees, naturally!

HEAVY-DUTY LAYENS HIVE – 14 or 12 FRAMES

*** * * IMPORTANT ! * * ***

1. **Paint the hive before use** – *see p. 2*.
2. **Prime all frames with wax foundation prior to use** – *see p. 2*.
3. **Install the hive slightly leaning forward (1°-2°)** so rainwater doesn't run into entrances.
4. **Don't let your hive overheat** – shade it and use other precautions – *see p. 3.*
5. **Don't let the bees run out of room** – make timely artificial swarms (splits) – *see p. 5*.
6. **Wedge the frames during transport** so they don't rattle – *see p. 3*.
7. **Exclude mice & provide additional winter insulation in cold climates** – *see pp. 6-7*.

PREPARING THE HIVE FOR USE

1. PAINT !

Paint all outside wood surfaces (walls, bottom, inside the entrance slot) with flat exterior water-based paint (latex/acrylic). For best results apply one coat of primer and one or two coats of paint. Use white or very light colors. *Do not use dark colors if your summers get hot*, or the box will overheat. We love the look of natural wood, but in our experience painting offers best wood protection, and it is not toxic to the bees. (We tried linseed oil, paraffin wax etc., and paint holds up the best!)

2. TENSION FRAME WIRE

Hive frames come fully assembled, wired, but NOT tensioned. Tension the wire before installing foundation. *See Appendix I, p. 9.*

3. INSTALL WAX FOUNDATION INTO FRAMES

You MUST install wax foundation in each frame (full sheet, half sheet, or at least 3" strip), otherwise the bees will build comb crosswise across several frames, making them impossible to remove/handle. I recommend using a full sheet of foundation in each frame for best results.

Embed wires into foundation using an electric embedder sold at HorizontalHive.com

As a DIY option, you can use a 12V to 24V DC current source, such as a tractor battery or an old laptop adapter (60W or more – but note that some adapters have overload protectors inside and may not work for this purpose).

1) Position the frame flat on the table with the frame's top facing you and its bottom raised 4" or so (e.g., put a mug under the frame's bottom bar).
2) Put a sheet of wax foundation on the wires so it touches the top bar.
3) Run 12 V to 24 V DC electric current through the wires (around 60W, that is 5 Amps at 12 V): for example, connect one pole of a tractor battery to one end of the frame-wire, and the other pole of the battery to the wire's other end. The electric current will heat the wire and embed it into wax. As soon as you see wires melting into the wax and "stitches" appearing on your side (wire half-through the wax), disconnect the power. Repeat on the remaining frames.

NOTE: If you want to run your hive as "foundationless", you still MUST install at least a 3" strip of foundation in the top of the frame (or you can use 1/3 or 1/2 sheet per frame). If you use anything less than a full sheet of wax, make sure the hive is level left to right (or bees will build according to gravity and connect frames together). Again, I recommend that you use full sheets of foundation.

Premium-quality eco-pure Layens foundation from Europe is available at **HorizontalHive.com**

4. HIVE STAND

It is best to elevate the hive to the height that would be comfortable to work with. You can use:

- Cinder blocks (2 blocks high on each end, 4 blocks total).
- Wooden stand – *Hive stand plans available at* **HorizontalHive.com**
- Legs – 30" long, made out of 2"x4" lumber and attached to the side walls with 2" deck screws. You can attach the legs at an angle to make the hive more stable.
- Metal stand, cross-braced (see color photos in *Keeping Bees with a Smile*) is perhaps the best option, but you'd need to get a welder to make you one.
- Wood pallets make excellent hive stands in places with black bears. Use a sturdy ratchet strap to secure the hive in the middle of a heavy standard 40" x 48" pallet – this makes it impossible for the bear to open it or tip it over. This *really* works!

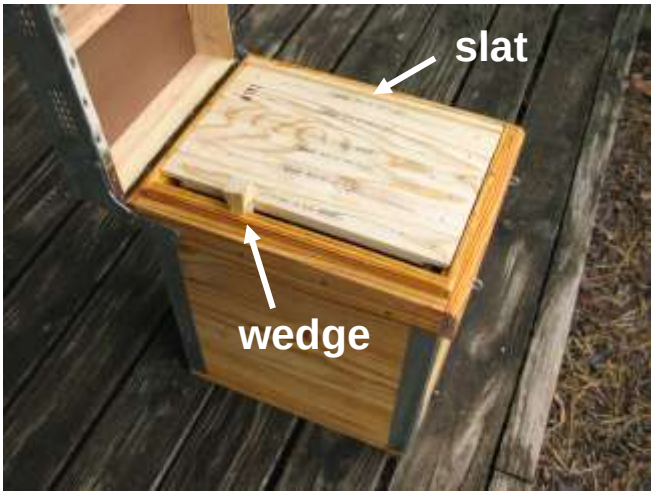
IMPORTANT: make the hive lean forward 1°-2° so rainwater doesn't run into entrances.

5. ROOF OVERHANG

If your hive sits in full sun and you frequently experience temperatures over 85°F, a 4" roof overhang will shade the roof and the walls, helping prevent overheating and resulting comb sagging or comb collapses. The overhang also sheds rainwater away from the box, extending its life. The easiest way to add overhang: place two pieces of wood 1.5" x 1.5" x 24" along the right and left edges of the hive top, with the ends of these boards sticking out 4" in front and in the back of the hive. Cover with a piece of corrugated metal roofing (also called barn tin) 26" x 34" and weigh it down with several stones. We use barn tin over *all* our hive boxes that don't have peaked roofs, and we highly recommend it. See more details and pictures at **HorizontalHive.com** under Plans > Peaked Roof. Also see more tips in the FAQ section.

6. WEDGE FRAMES TIGHTLY TOGETHER IF MOVING THE HIVE!

Layens frames come in two designs (fully interchangeable): with end bars that are straight (like in this hive – 1" wide) and end bars that are tapered (1-1/2" wide at the top, and 1" wide at the bottom). The straight bars are the original classic Layens design making ventilation and bee traffic easier; bees don't propolise the top of these frames as much & you don't crush bees when sliding frames together. Leave the plastic spacer clips at the bottom of the frames on.



VERY IMPORTANT: only transport the hive with *all* frames inserted and tightly clamped together – the slat and the wedge help with that. Insert a slat before the first frame. The **slat** goes narrow side down, protrudes above the frames. It assures the correct spacing between the wall and the first frame, and makes removing it easier. Insert the **wedge** after the last frame as shown in the picture. The slat and the wedge squeeze the frames tightly together so they don't rock when the box

is moved. A wedge (and the slat) may be provided with your hive, but it can also be cut from some scrap lumber or it can just be a piece of tree branch of suitable size, wider at one end than at the other. If the hive is moved without the wedge, the frames may swing or slide, crushing bees and endangering the colony. If you must move a partially filled hive, be very careful.

MANAGEMENT SUGGESTIONS

7. INSTALLING A COLONY

When installing a new colony, place several frames against one wall, then a feeder (*available from* **HorizontalHive.com**), then a divider board to cut off the unused empty space, leaving 3/4" gap between the divider and the bottom. How many frames to start with depends on the strength of the swarm, on the ambient temperature, and on whether you have small hive beetles in your area. A very large swarm needs 6-7 frames, medium swarm (4 lb) – 4-5 frames, small swarm (2-3 lb) – 3 frames. You can give a bit more than that if a) you don't have small hive beetles where you live and b) the weather is reliably warm. We do not recommend package bees at all, but if you install package bees, give them 3-4 frames initially. If you purchased a "nuc" (starter colony) on conventional American (Langstroth) frames, convert them to the Layens size so they fit this hive – see FAQ on **HorizontalHive.com**

8. DIVISION BOARD

You may sometimes need to use a divider board in your hive. A divider board (not included) is simply a piece of plywood or hardboard 13-5/8" wide x 17" tall. Two layers of thick cardboard fully wrapped in shipping tape works great as well. Leave a 1/2" to 3/4" gap under it by putting a small stick under it or by screwing two drywall screws into the bottom edge of the divider board, to serve as legs (let the screws stick out by 1/2" to 3/4").

9. FEEDING A SWARM OR PACKAGE

Complete feeding guide is available in the FAQ section of **HorizontalHive.com**
Feed your swarm IF unfavorable weather prevents bees from foraging; they will starve to death or will be severely weakened if you don't feed. Package bees *must* be fed.
OPTION 1: give them a frame of honey from your other hive or from your reserve.
OPTION 2: Otherwise feed using the Layens frame feeder and follow all precautions in *Keeping Bees in Horizontal Hives*, particularly: 1) give the feed in the evening to prevent robbing; 2) cover the feed with a layer of small wood chips or bits of twigs, to serve as floats and minimize bee drowning; 3) only give as much as bees can consume overnight (to prevent robbing) – about 1 cup (more for strong colonies), 4) reduce the entrance to 1/2" wide during feeding. Best feed is 1 part honey to 1 part water, as long as the honey is genuine and from a source that is free of foulbrood (that is, your own honey from healthy hives). Do not feed bees somebody else's honey or you can introduce foulbrood – instead, use 1 part organic sugar to 1 part water. See *Keeping Bees With a Smile* for details on feed preparation and feeding. Remove the feeder when done feeding, or bees will build comb from the feeder's bottom. Feeding is rarely needed for more than a week to 10 days maximum.

10. EXPANDING THE HIVE SPACE

Check your new colony periodically (every 1-2 weeks). If they've built out the initial frames at least 2/3 down, time to add more frames.

11. ENTRANCES

Under normal operation, only the bottom entrance is open. Open the upper entrance when three conditions are met: 1) strong colony; 2) hot weather; 3) abundant nectar flow. (If bees beard outside the entrance, this is a sign that the top entrance should be opened. Note that it can also mean that the hive is getting overpopulated – see next point.)

The top entrance can also be used to install a pollen collector from HorizontalHive.com
This is a great way to harvest bee pollen – a super valuable natural superfood.

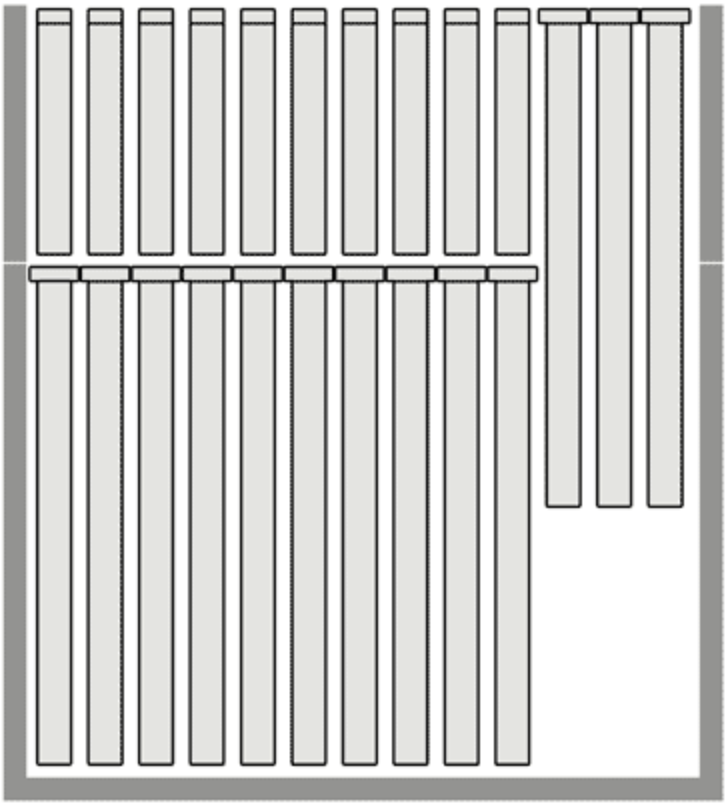
12. BEFORE BEES RUN OUT OF ROOM...

See the complete discussion of this topic in the FAQ section of **HorizontalHive.com**

This is a relatively small hive. It is best used for multiplying the number of your colonies quickly, for your own operation or for sale. (If honey production has greater priority, or for a more hands-off approach, we recommend the 20-frame insulated Layens hive of the 25-frame Layens solid-wood hive.) An overwintered colony or a strong early swarm will run out of room in this hive by mid- or late spring. If you do nothing, the bees will *swarm* (possibly more than once), meaning the loss of bees and smaller honey production. Also, as bees bring in a lot of nectar, the hive may become *honey bound* (i.e. most cells are used for honey and the queen has nowhere to lay, weakening the colony). So for best results stay ahead of the bees and don't let them run out of room. You have several good options for that:

a) Make artificial swarms (splits) in a timely manner. **Best option, highly recommended.** Many excellent simple techniques are described in our books. In particular, see "artificial swarming with two hives" in *Keeping Bees in Horizontal Hives* (p. 185), which works really well. If the colony has at least 7 frames of brood early in the season and the weather is reliably warm, making an artificial swarm with one hive (*Keeping Bees in Horizontal Hives*, p. 258) is another good option. You may be able to repeat artificial swarming twice during the season and double or triple the number of your colonies. See more in the book *Raising Honeybee Queens*. Also see information on "even splits" in the Afterword to the 2020 edition of *Keeping Bees with a Smile.*

A SIMPLE EXAMPLE: 10 to 12 weeks after the beginning of flowering & bee activity, a healthy overwintered colony has 8 frames of brood and 4 frames of honey/pollen. I get another (empty) hive like that and, without finding the queen, move every other frame of brood (bees & all) and every other frame of honey into the new box, plus give each hive 3 frames of foundation. I position the colonies side by side so that the original location of the entrance is now between the two hives (this helps split the flow of foragers). Whichever hive has no queen will raise themselves one; both will regain strength and produce honey.



b) Put a super over your 12 or 14-frame hive. When bees cover all frames but before they get congested (bearding outside the entrance or covering the inside of the lid), add a bottomless box (super) on top of your hive. The super should measure 13-11/16" inside, front to back, with 3/8" W x 7/16" deep rabbets to hold the frames. It is 8-3/16" deep and as wide as your hive box. Raise 3 last frames, containing no brood, into the super (they will be hanging half-way down into the hive body), fill the rest with Layens half-frames 7-13/16" deep – available from HorizontalHive.com Since this option requires additional equipment, making timely splits as described above may be your preferred method.

c) When the hive is really full, **harvest honey frames,** extract, then return extracted frames to the bees to refill. This option is not as good as making a timely split. When you pull honey in mid-season, you'll have to regularly take frames from very active hives boiling over with bees, and many honey cells may not be capped yet. Also this option may not be enough to prevent swarming or the nest becoming honey bound.

13. WINTERING

The best wintering setup is shown in Layens's book, Chapter 24. Basically, for a strong colony, at harvest time leave up to 7 frames at least 1/2 full of honey, plus (in cold climates with springs that can be cool or rainy) two full frames of honey, one on each end of the nest. (Fewer frames are required for smaller colonies or in southern climates with short winters.) Then insert the divider with the 3/4" gap underneath. Finally, cover the top of the frames with a wool pillow. A pillowcase filled with natural wool is best and has far better insulation value than other materials such as wood shavings. Leave at least 1/2" air space around and above the pillow to aid ventilation. Spread the wool inside the pillow to both sides, leaving no wool along the central line so the thickness of the wool does not interfere with you closing the lid (the central beam of the lid goes into that depression in the middle of the pillow).

Raw wool and pillows are available from **HorizontalHive.com**

Additional winterizing tips for climates with cold winters:

- Position the wintering cluster in the middle of the hive, with divider boards on both sides. The empty chambers will provide additional insulation. If you have very cold winters, preferably put a pillow filled with wool after each divider board.

- Block the bottom ventilation slot for the winter using a slat or a piece of duct tape.
- Make sure only the bottom entrance is open.
- Insulate the front and back wall of the hive (e.g., attach 1" rigid foam insulation holding it in place with screws or a ratchet strap) or wrap your hive in black roofing felt (don't block the entrance).
- Provide a good windbreak to minimize wind chill. Have no trees, fences or buildings? Use straw bales.

IMPORTANT! EXCLUDE MICE by attaching (with lath screws or staples), in the fall when bees are still active (before the first hard freeze), 1/2" wire mesh over the entrance. Mesh size is important – bees must be able to go in and out at all times! Remove the mouse guard when bees start flying in the spring.

GAP AFTER THE LAST FRAME IS GOOD

The top bars of the frames touch. When the hive is full of frames, there's a small gap after the last frame and the wall – this makes removing the last frame easier and aids ventilation; this gap is best left open. The bees will have access to the space above the top bars, which is OK, and they won't build comb in the lid unless they run out of room in the hive itself. If you want to exclude them from the attic, fill this gap with a slat (not provided), or cover everything with duck canvas or a woven-plastic grain bag.

NO LANDING BOARD NECESSARY

Landing boards are not really necessary with this hive model. Bees do fine without them in nature, and they will do fine without a landing board on this hive, as confirmed by experience.

READ LAYENS AND LAZUTIN BOOKS

Keeping Bees in Horizontal Hives by Georges de Layens and *Keeping Bees With a Smile* by Fedor Lazutin are essential for successfully managing this hive. Both are exceptional resources on natural beekeeping and are available from **HorizontalHive.com**

NATURAL BEEKEEPING SEMINARS AT DR LEO'S BEE RESERVE

To see these hives in action and to learn all nuances of their use, consider attending one of the Natural Beekeeping workshops at our apiary in Missouri. You'll have all your questions answered, saving you years of trial and error. Seminar schedule is available at **HorizontalHive.com** Hope to see you there, or at one of Dr Leo's other talks around the country.

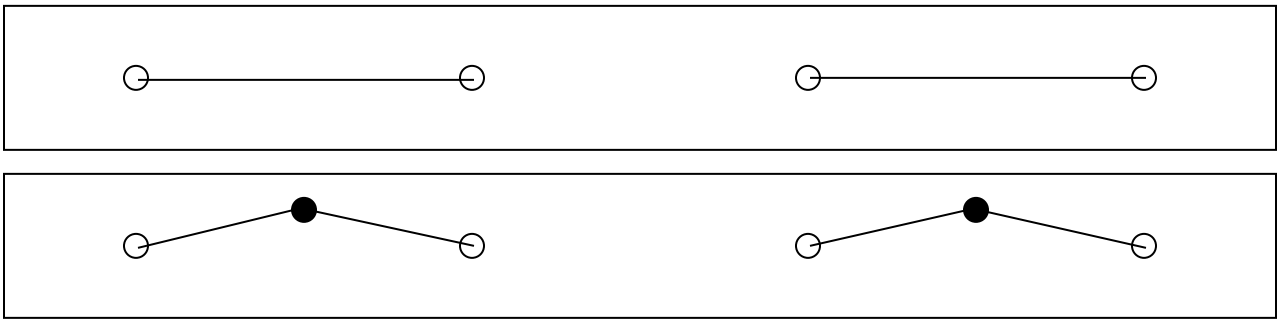
Thank you and with best wishes – Dr Leo Sharashkin, Beekeeper and Editor

HOW TO REMOVE *MINOR* SLACK IN PREVIOUSLY TENSIONED FRAMES

It's best to tension wire in the frames (see next page) just before installing foundation, as some frames may develop a slack in the wire. If you do not see visible sagging in the wire, your frames are ready to be primed with wax. If the wire is not taut enough (visibly sags), it's best to tighten it prior to installing wax foundation and giving the frame to the bees. You have two easy options to tighten the wire and remove *minor* slack:

- **Use wire crimper tool.** Wire crimper is a simple tool consisting of a U-shaped handle with two steel cogwheels at the top. Squeeze the wire between the cogwheels and pull. This will crimp the wire (create a wave pattern in it), pulling it tight. Wire crimpers work well to eliminate *minor* slacks and are available from many beekeeping supply places. We do not carry them because we like the next method better!

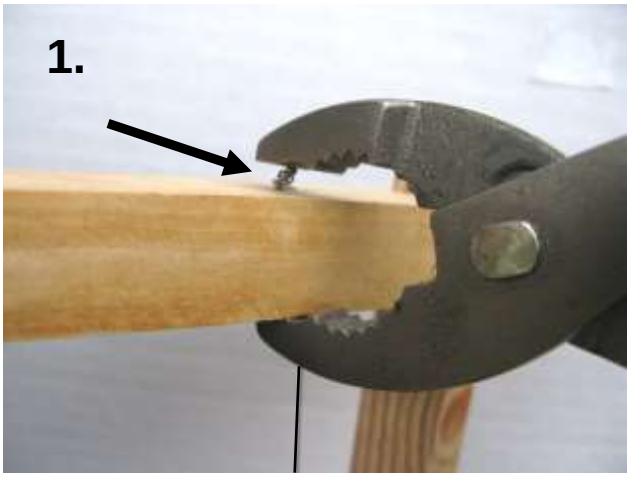
- **Anchor wire with two little nails.** Without a wire crimper, tighten the wire using two little nails. When you look at the top of the top bar, you see two segments of wire. Pull the middle of each segment sideways and anchor it in place with a very small thin nail (3/4" or smaller), or a staple. This will tighten the wire. The picture below illustrates this point (top bar viewed from above, before and after.) Make sure the top bar is supported from below on the corner of a workbench when you do that. Tip: if you don't have short nails, use wire cutters to cut a slightly longer nail to required size. Only use very thin nails.

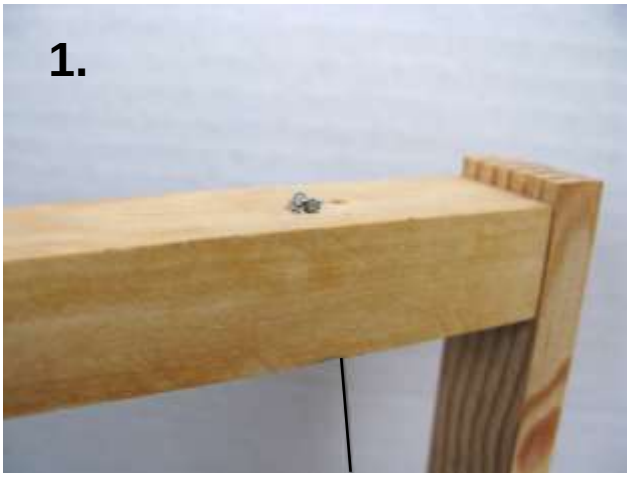


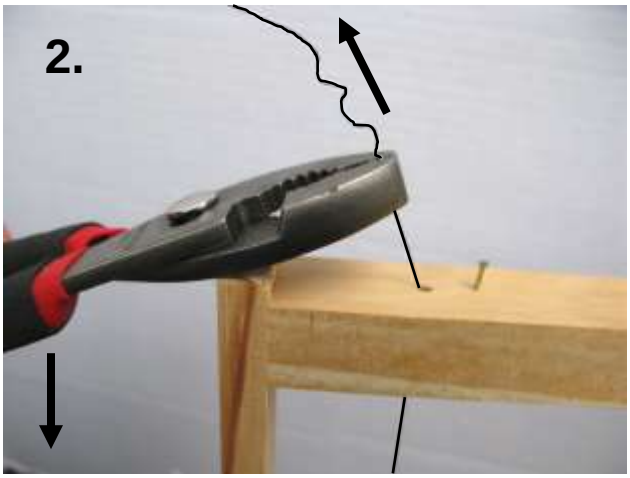
APPENDIX I: How to tension wire with pliers

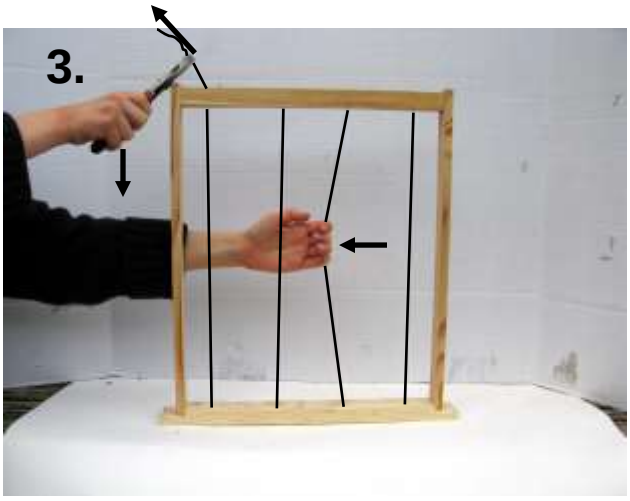
Slip-joint pliers and several minutes of your time is all you need to tension the wire.

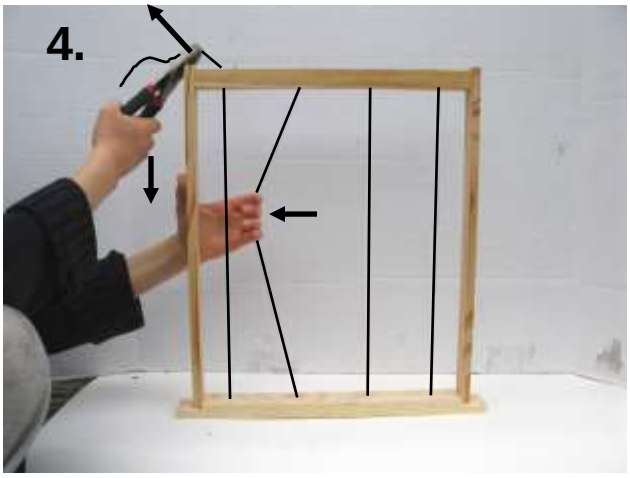
1) Wrap the wire around one anchoring nail. Using pliers, push the nail deeper, then push all the way in *or* bend it. This end of the wire is now firmly anchored.
2) Grab the other end of the wire with pliers as shown (wire runs *between* the jaws, never over the tip of the jaw or it may break). Use the end of the side bar as fulcrum: as you pull pliers' handle down, you raise the wire, tensioning it.
3) Holding the end of the wire with pliers with one hand, pull the 3rd segment of the wire toward you (3rd as you count from you). This pulls wire slack from the 4th segment into the 3rd.
4) Pull the 2nd segment of the wire toward you. This pulls wire slack from the 3rd segment into the 2nd.
5) Pull the slack out with the pliers, working as described in #2 above.
6) Repeat Steps #3, #4, #5 until all slack is removed and the wire starts sounding like guitar strings. Do not overtighten. Too much pressure may distort the frame, damage frame joints, rotate the bottom bar, or even break the wire.
7) Wrap the wire around the nail. Push in or bend with pliers. Grab the loose end of the wire, pull up and rotate like a tornado until it breaks at the base. Done!
8) Repeat with other frames.

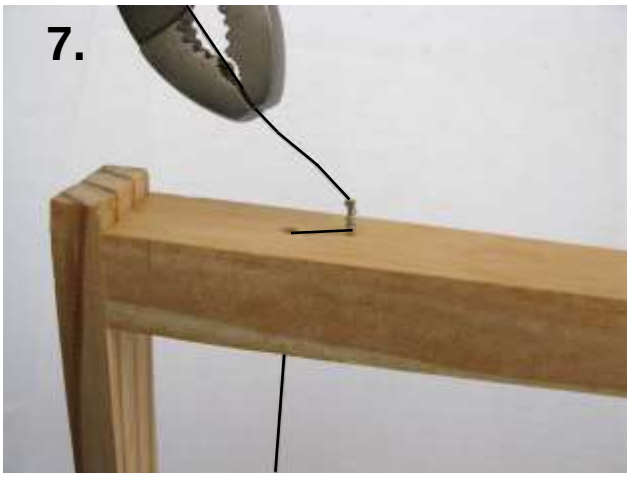


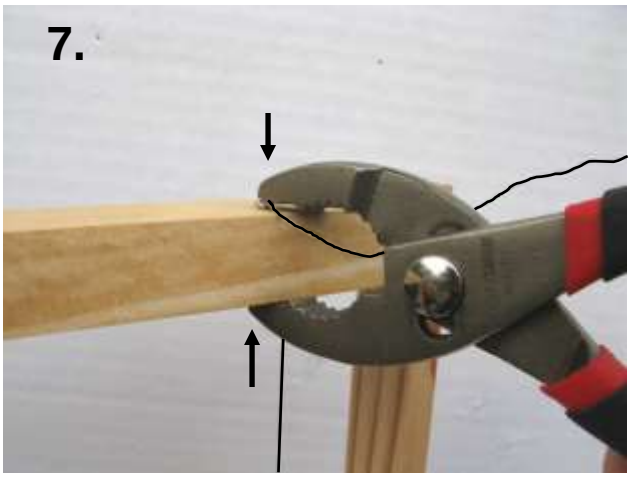


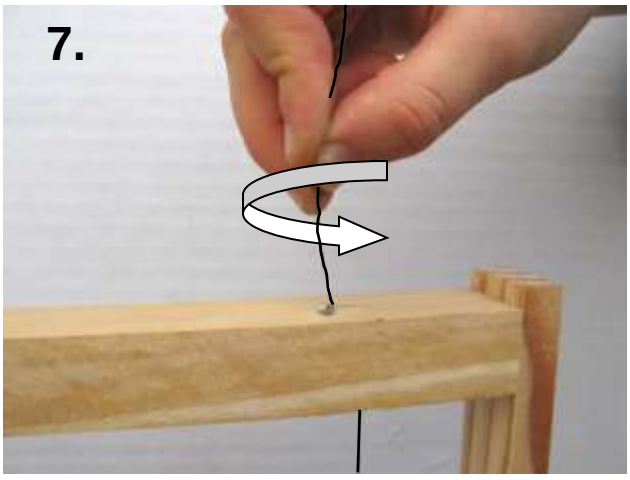












Zaryana, 9, can tension a frame in 60 seconds. So can you!

More stainless steel wire is available from **HorizontalHive.com**