

Log Cabin Chronicles



Jane Goyette tending her 25-loaf wood-fired bread oven at Hogwallow Farm in Fool's Hollow, Quebec

How To Build a Wood-Fired Oven & Start a Home Bakery

Being a Tried & True Method
of Dealing With the Reality
of Getting Together our Daily Bread
(and Having Some Extra Loaves to Sell)

BY JOHN MAHONEY, EDITOR, LOG CABIN CHRONICLES

During the years we did subsistence farming we were constantly faced with the necessity of earning some cash money on a more-or-less regular basis, and we tried to do things at home, at our own pace, that would bring it in.

Making a tasty, nutritious, self-liquidating product with simple tools, that sold for a fair price and returned a modest profit complemented our farm-based apple cider business that we conduct in the fall. Baking and cidering, we concluded, were personally satisfying, socially useful, life-nurturing processes -- a matter of right livelihood. Both used small amounts of energy and provided, to our way of thinking, healthy alternatives to chemically bleached ya-ya bread and heavily-sugared "fruit drinks."

Our bread oven bakes with a slow, steady release of energy stored in a heat sink, which is then entrapped in the dome. We fired the oven with softwood slabs from the now defunct village sawmill -- they were relatively cheap, dried quickly, and burned hot and fast for a quick release of energy.



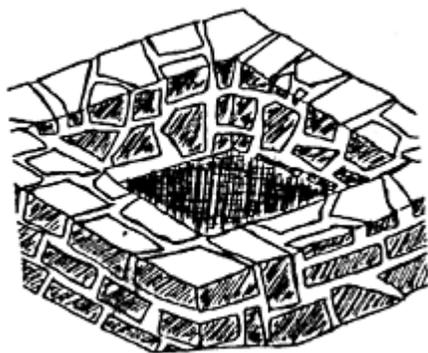
Yeast breads, rolls, cookies, pizzas, turkeys, and beans were baked in pans and crocks. Sourdough breads went directly on the hot oven bricks and were sprayed several times with clean water that converted instantly to steam -- the secret to fantastic bread crusts. Read on...

We built the oven of local fieldstone and blue clay, sand, gravel, and dry swale grass. The metal door arch is a discarded tractor tire rim from a Ford 8N (many thanks to Tony Kemp of Boynton, Quebec).

Like all major projects at Hogwallow Farm, the bread oven began with a large, hand dug hole. Our sons, Sean, Keith, Kevin and Denis dug most of the hole. Indeed, they would tell you that they dug most of the holes, most of the time, here at Hogwallow Farm.

We dug a drainage ditch out from the lowest corner of the base hole to prevent any damage by frost heaves. The base hole and the drainage ditch were filled with large stones, then increasingly smaller ones, beginning with the size of your fist.

Coarse gravel was shoveled on and leveled. Around the perimeter, just below ground level, we then poured a layer of cement, several inches thick, on which we set the base stones of the oven.



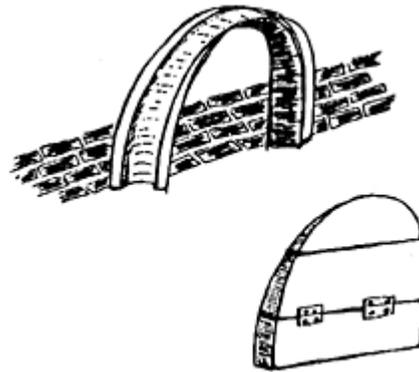
filling with sand.

When the cement hardened we had a low, square crib of stones embedded in a rough slab floating on a drained rock bed. From here we went straight up, one stone after another, around the perimeter until we reached waist level. As the walls got higher, we started to fill the cavity -- first with fist-sized stones, then smaller ones on down to coarse gravel. About knee level we started

This fill -- stones, gravel, sand -- became the heart of the heat sink, the place where the energy released from the burning softwood slabs is stored. As we added the sand and gravel to the stone base we compacted it by methodically walking over the surface.

Once the cribbing was waist high, we placed two layers of brick on the sand, taking care to level them. The clay walls of the dome would be placed directly on the bricks. The bottom layer is of bricks made of hard cement salvaged from a fireplace; the oven floor is of used refractory firebricks recycled from the kiln of the ceramic artist Kent Benson, also of Boynton.

The metal door frame, a 24-inch diameter tractor tire rim, was suspended with baler twine in a bed of cement in front of the bricks; we took care to plumb it. The recessed mid-section of the arched rim holds the heavy clay/sand/swale grass mixture securely. The two-inch thick planked "door" -- actually, it's a plug -- fits snugly into the inside lip of the rim to hold in the heat when baking. It is hinged for easy inspection and spraying. We prop it shut with a metal rod while baking.



Meanwhile, as the cement around the rim cured, we prepared the blue clay we had dug from the Tomifobia River Valley. A Sherbrooke University geologist reckoned the clay, some of it stratified with very fine sand, was deposited around 12,000 years ago.

After digging the clay, we laid it out to cure on sheets of used tin roofing. We chopped it into small pieces with a spade to speed the drying and curing process. Then we used two antique bathtubs and a worn-out metal maple sugar pan to soak the small dried chunks of clay which we covered with clean water.

As the clay softened, we worked through it with our hands to remove any pieces of organic material. Once the clay had softened to a smooth homogenous mass we drained off the surplus water and let it stiffen a bit before using it. It has to be stiff enough to hold its shape once mixed with fine sand and dry grass and kneaded into "loaves."

We mixed thirty percent fine sand by volume with the clay, and added dry swale grass -- a tough, fibrous, flat-bladed grass that grows on damp land -- as a binder. It worked best cut into six to eight

inch pieces. We used enough in each batch -- two sand, six or more of clay -- to help give form to each clay "loaf." This was done in a third bathtub, using hands and feet most vigorously.

The sand was worked thoroughly into the clay, then the swale grass was kneaded in. As a binder, its function was to keep the clay from cracking apart as it dried and shrank.

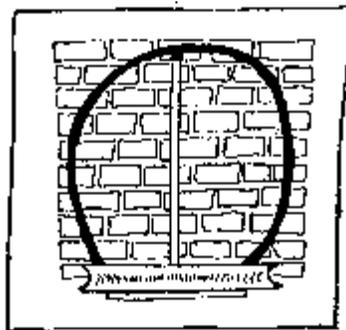
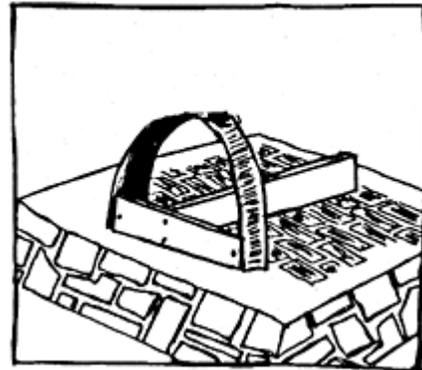
The clay loaves were kneaded on a clean piece of plywood (we discovered it is important to keep the plywood damp and scraped clean of bits of drying clay).

The loaves were then molded together over and around a skeleton made of a four-inch board "spine" and some supple saplings. The wooden form was burned out during the first firing.

Our oven interior is roughly horseshoe-shaped, and holds up to twenty-five 1.5 pound sourdough loaves at a time.

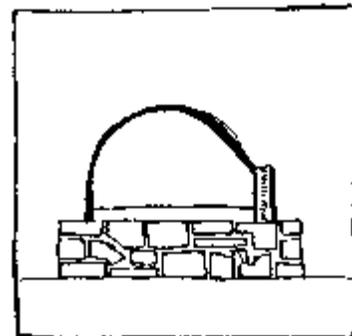
This is the way we built the skeletal form that gave the oven its shape:

We affixed a 4-inch board across the door opening, then screwed on another 4-inch board, centered at right angles. To this center board, a thumb-sized sapling was secured, bent to the desired dome profile, then hooked under rim edge at the inside top. Upright and diagonal center braces were screwed in place.

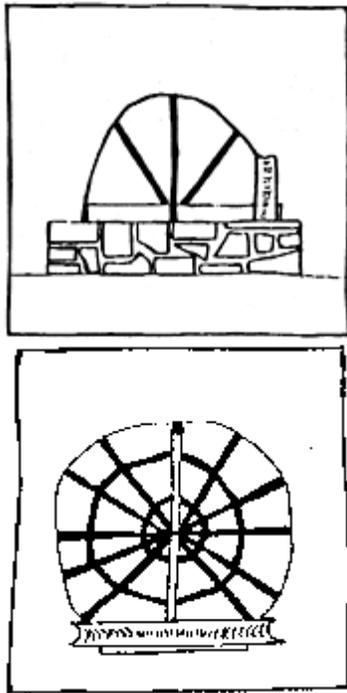


A 3/4" flexible plastic hose was used to define the inner perimeter.

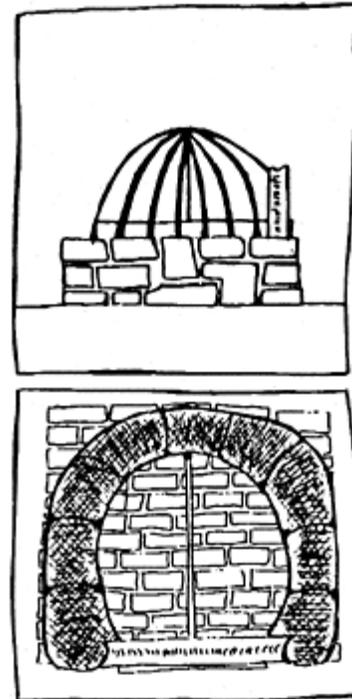
This was removed after the first layer of clay was laid up.



More vertical saplings were lashed at the top, and horizontal saplings added at midlevel and near the top.



Clay loaves were molded around perimeter and worked together into a solid clay ring, insuring that the loaves extended and locked into the tire rim cavity.



Next, we filled the base with three inches of damp sand. Eventually the dome was filled with damp sand. This retarded drying so the clay wouldn't crack too much. The inside of the rim was sealed so the sand wouldn't run out. We used two cardboard panels that were removed after a ten-day curing period so the sand could be shoveled out.

Another layer of loaves was then added, making sure the inside and outside surfaces were molded smooth, and the inside filled with sand. It took six days to build the dome. At the end of each day we covered the clay with a large sheet of plastic film to prevent premature drying. After we capped the dome with clay, the plastic film was left on for a week. During this period I added clay to the top and refined the form by adding clay wherever needed.

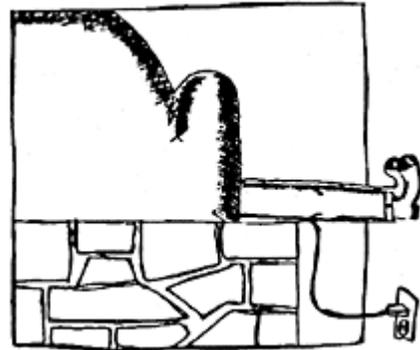
Several times a day we removed the plastic and, with wet hands, smoothed the outside of the dome. Once the plastic sheet was permanently removed small cracks appeared as the surface started to dry. We filled these with wet clay.

After ten days we removed the cardboard in the door frame and carefully shoveled out the sand and brushed it gently from the interior surface of the dome, which at this point was still moist. As drying continued, the outside surface kept cracking and we continued to fill these cracks with wet clay.

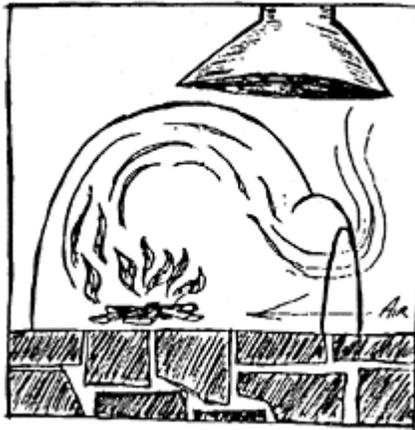
The first firings were small to avoid drying the dome too quickly and

cracking it badly. The wooden framework burned away. Once the interior clay was vitrified by the heat, we carefully brushed off any sand clinging to the surface.

Our oven is large enough to squeeze half your body into. (When you inspect the interior, take an electric light with you but beware -- it gets warm. Be sure to wear goggles or safety lenses to protect your eyes from falling sand and clay particles.)



The first small fire was made of newsprint and scrap cedar shingles. It was incredible. Our chimney-less oven really did draw in enough air through the lower third of the rim opening to support combustion, and the smoke promptly found its way out through the upper two-thirds. The red-orange flames neatly licked the curved clay surface.



In an enclosed space, the smoke and sparks must be dealt with. Therefore we are using a 48-inch diameter hood with a twelve-inch stack. (Initially we tried a 36-inch hood with a 7-inch stack but it wasn't large enough to handle the smoke volume during the early stage of the firing before the oven got really hot, and all the gasses and particles combusted.)

Our usual procedure on a bake day was to fire the oven around 6:30 a.m. and continue with an intense fire until 10 a.m. Then we tapered off on fueling the fire so that at 11 a.m. there were as few coals as possible left to rake out.

Small pieces of softwood burn faster and leave less residue in a given period than hardwood.

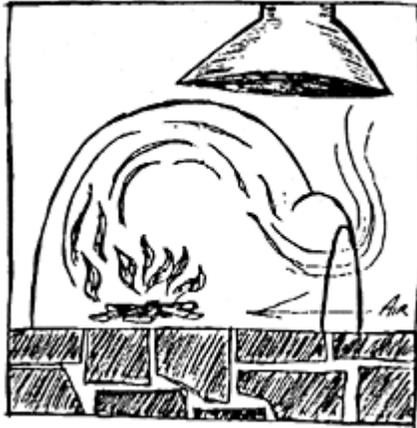
The dome interior blackens with carbon particles at first, but as the oven heats up the carbon combusts. When the oven is hot, the dome becomes light grey.

We learned by experience to start the fire in the rear of the oven and as the bed of coals grows, expand it to cover the entire brick surface.



Once the coals are raked out, the bricks are cleaned with a large piece of

wet burlap tied to a handle, in our case an old hockey stick. You vigorously swish the wet burlap in a circular pattern over the bricks; the tip flicks clean the perimeter of the inner oven.



This can be a messy process. Ash does fly out the door -- try not to breathe it. I soon learned to wear a bandanna, outlaw style. Obviously, the fewer hot coals zipping about, the better. I also wore my favorite work hat -- a railroad brakeman's cap, pulled way down.

It takes about one hour for our oven to drop to initial working temperature. -- 450 degrees Fahrenheit. Instead of using a thermometer, we tossed a large pinch of unbleached white flour onto the bricks. When we could count to fifteen before the flour starts to brown, it was time to put in the baguettes which baked in 12-15 minutes.

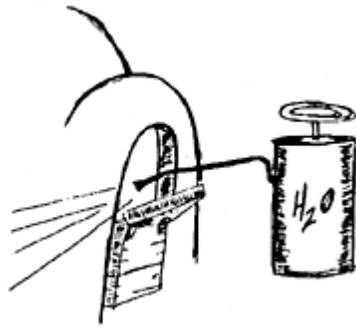
The door plug was kept shut during the baking and between baking the different breads to trap the heat released from the base storage area. (The over temperature drops as stored heat is lost by surface radiation and convection as the door is repeatedly opened during loading and unloading.)

The sourdough loaves -- baguettes, wheat, and rye with or without caraway seeds -- were placed into the oven on a long-handled wooden paddle, the peel.

First, however, we quickly brushed the bricks clean. We also brushed between loadings to clean out any bits of carbonized cornmeal and cracked wheat. (We had previously sprinkled fresh meal on the peel to help the dough slide gently onto the bricks.)

It takes a bit of practice to place the dough just where you want it without touching the hot oven or another loaf, to which it will then stick and spoil the crust at point of contact.

We didn't sell those loaves -- we ate our mistakes. Indeed, we ate a number of those loaves -- the burned and deformed we called them -- in the early days of learning to fire the oven and judge the temperature, and while divining how to slide a dozen nice long baguettes onto the bricks and not end up with a number of J's and S's. They tasted fine but looked just too weird to sell at the village store.



It takes several minutes to load two dozen loaves at one time. We close the door with each loaf to minimize heat loss. After the last loaf was loaded we shut the door for ten minutes to build up temperature. Then, cracking open the door, we sprayed clean water from a garden sprayer onto the bricks. It evaporates on contact, enveloping the loaves in hot, moist steam.

Our usual daily batch was fifteen baguettes, followed by twenty or more whole-wheat loaves, then twenty of rye. By then the oven had cooled and another batch of bread would take somewhat longer to bake. At this point it was about right for cookies.

Often, in the late afternoon, we'd stick in one our home-grown eight-lb. chickens, wrapped in foil to self-baste. Then, around 9 p.m., we'd put in pots of beans to bake overnight -- they'd be ready by 6 a.m.

We baked two or three days a week during the summer; the dough was prepared in the kitchen and carried, covered with cloths, to the bakery on narrow sheets of plywood. Between 1980 and 1986 we baked more than 12,500 loaves, or nearly 17,000 lbs. -- 8.5 tons -- of bread.

Usually we fired the oven for an hour or so the night before the first bake day each week to preheat it. This meant a little extra sleep the next morning. We kept the door closed between bake days to retain as much heat as possible. There are several variables when baking with a wood-fired oven of this design -- outside temperature, humidity, wind velocity, atmospheric pressure. And each oven is different, of course, as is its location. The only way to judge is to learn by doing it yourself.

Traditionally, these Quebec ovens were built outside with an A-frame roof to keep off the worst of the rain and snow. We built our oven beneath a log cabin -- that is, the cabin was suspended within deep-set cedar poles about eight feet off the ground. The open space under the cabin had been used for hay storage before our barn was finished.

By pouring a cement floor and filling in the spaces between the poles, our semi-sheltered bread oven was neatly enclosed in an insulated room approximately sixteen-feet-square.

When our family is all together and we invite friends and neighbors over for a potluck dinner -- there may well be sixty or seventy of us -- the bakery makes a swell place to lay out all the food and drink. The hungry hordes line up at the front door and exit at the rear with laden plates.

