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In Search of the Perfect Pot

By David Wescott, with Steve Watts and Don Kevilus

Part 3 - The Tinkers' Art - Create Your Own Bushcraft Pot

Here's a project that utilizes your Urban Bushcraft skills. Woodcraft, by definition, implies working with materials found in nature (Dan Beard), while using materials that are found around us on a daily basis can be "upcycled or repurposed" to create very functional items using the same skills, tools and techniques - thus, Urban Bushcraft - perfect for those who can't make it to the woods, and you're still focusing on the "making" rather than "buying" of gadgets for your kit.

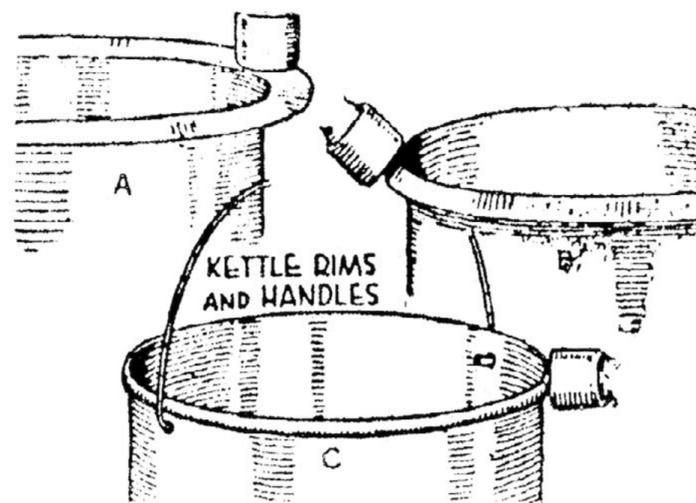


David Wescott with Don Kevilus Rabbitstick

There are 2 illustrations that I have had in my files since I was a kid. One is from an old scouting magazine article called "Can Craft", and the other is from one of my alltime favorite books, The Golden Book of Camping, and illustrates how to create a friction lid that prevents spills. The first one shows how to "turn the edge" of a tin can using basic tinsmithing techniques to stretch, bend and shrink the rim without it cracking or tearing. It comes from a 1948 Boy's Life magazine article*.

* The article opens, "Of all the things that can be made of discarded tin cans, the Scout Cooking Kit is perhaps the most useful. The usual kit consists of a cup, two kettles and a frying pan. The entire set should be constructed to fit one inside the other." I have cooked in tin can billys for decades with good results. However, the thought of trying to cook in a frying pan made from a tin can is a bit scary.

If you want to see the entire article, do a Google search for "Can Craft", Boy's Life April 1948, page 10. The article also mentions a color movie on "Tin Can Craft" which was available through the Visual Education Service of the Boy Scouts of America. It would be interesting to find a source for that film.



Above: Pot Rim Boy's Life, 1948



Above: Cup pot (32oz - left) and 8 cup pot (64oz - right).

Make Your Own Urban Bushcraft Pot

Step 1 - Open a can and mark a line on the outside of the can that indicates the finished height. (See Part 4- Pot Efficiency for proper pot shapes).

Mark a line on the outside of the can that indicates the finished height. This helps you cut a straight line.

Step 2 - Cut the can to the desired height. Be very careful, as the edges are very sharp. Use sharp tin snips to cut from right to left (I'm right handed) allows the trimming to roll away from the can and lets you to cut a nice straight line. If the line is not straight, take a minute and clean it up before going to Step 3.

Cutting from right to left (I'm right handed) allows the trimming to roll away from the can and lets you cut a nice straight line. Note: Know your tools. Tin snip grips are typically colored red, yellow, or green, and each color indicates a different direction that the snips are made to cut; red snips cut left, yellow snips cut straight and green snips cut right.

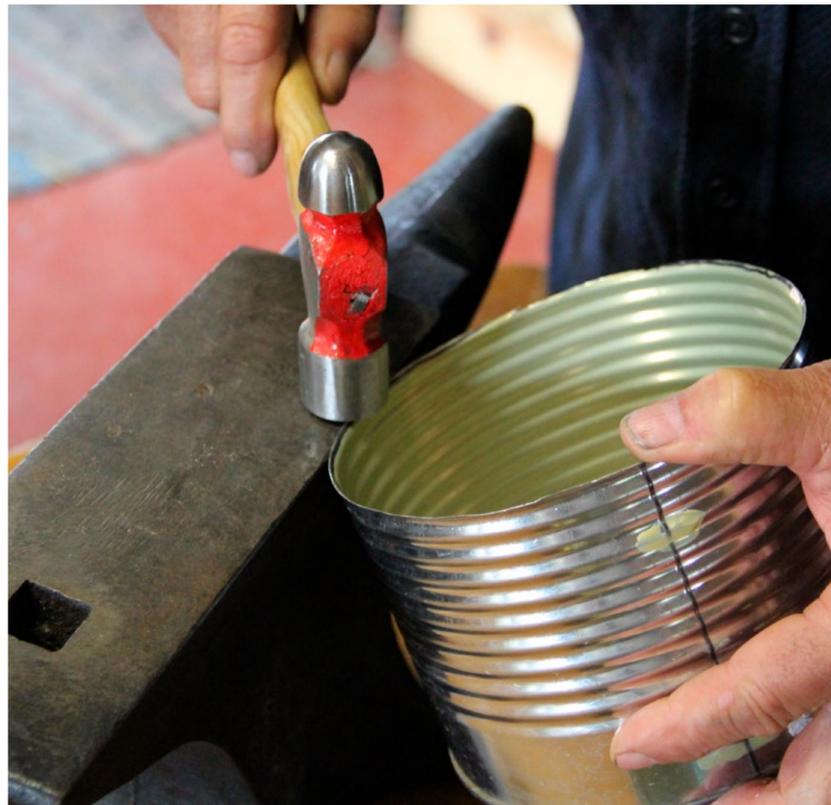


Step 3 - While holding the can at an angle, use an anvil, block of wood or other hard edge to gently start the turning process by lightly tapping around the entire rim and flaring the edge to a 45° angle.

Continue the cut using yellow snips. Make a second pass around the rim and try to make your cut on the high point of one of the ribs. This will create a flare in the can that will allow you to start the turn more easily.



Step 4 - Hold the can upright with the rim on the anvil and go around a second time and turn the edge to a 90° angle. Note: Do this gently. If you hammer it too fast and too hard, you will stretch the metal beyond its capacity to shrink back once it's turned to 180°. Hold the can at 45° angle and begin to turn the edge - first 45°



Step 5 - Set the can upright and use a hammer to gently tap the rim back on itself another 45°. Support the rim and tap it gently to create a nice even edge. Hold the can upright and continue the turn to 90° using the edge of the anvil. Once the rim becomes flat, place the can on the anvil and flatten the entire rim. While supporting the can from below, the inside thumb braces the pot wall while you hammer slightly in and down to continue the turn.



Step 6 – Place the can on an anvil horn or block of wood in a vice. Now gently hammer the edge and complete the turn. Go slowly and lightly. If you go too fast, the rim will split and there is no way to repair it. Photo 8 – Place the rim on the horn and gently flatten it. Don't hit it too hard or you may split it. If areas start to pucker, gently flatten and compress them. Be patient.

If done properly, you now have a strong rim without a sharp edge. An advanced process would be to turn the edge with a bit of wire enclosed in the roll for a rounder rim. This is another level of skill, but can create gaps where food residue becomes hard to remove. (Maybe this warrants a flow-up article on Wirecraft). If the edge is nice and straight, you can make a friction-fit lid that will work as well as a commercial one at little to no cost.

The second illustration shows how a lid may be removed from a can leaving small tabs that are bent to create friction tabs so that the lid stays in place. This is one of those drawings I have looked at for years and never tried until I was teaching students how to create their own cooking pot using upcycled materials and urban bushcraft skills. It works amazingly well if you create a clean, straight rim for your pot.

Step 1 – Using a can that is the same size as your pot, cut the bottom off of the opened can with a sharp pair of shears, leaving about one inch of the can sidewall attached to it.

Step 2 - Use a marker to establish how many tabs you want to create and where they will be located.

Step 3 - Using the shears, trim the excess material as closely and cleanly to the rim as possible, leaving the tabs - 3 to 4 tabs works best.

Step 4 - Place the lid on an anvil and gently flatten the tabs against the lid.



FOR THE LID, CUT ANOTHER CAN DOWN UNTIL ONLY 1" HIGH.



WITH TIN SNIPS, MAKE CUTS 3/4" APART. CUT OFF ALL TONGUES BUT SIX. BEND THESE TO FIT INSIDE THE POT.



HANDLE IS WIRE RING FASTENED BY TIN STRIP AND TWO RIVETS.



PROVIDE POT WITH WIRE BAIL.

Step 5 - Use a pair of pliers to stand the tabs back up to 90° from the lid. However, make sure that the tabs are bent upright from a point about 1/8" in from the rim. This will allow the lid to fit tightly against the rim of the pot. By not doing this, the tabs get in the way.

Step 6 - Bend the tabs so that they create a bump (as shown) that presses against the inside of the pot creating the friction needed to keep the lid in place.

Use a pair of needle-nosed pliers to create the bulge in the tab that process the friction.



Step 7 – Add a knob or wire loop for lifting the lid. This is a bit of a personal touch and makes your pot a "One of a Kind", and you can proudly say, "I made it myself!"

"A good pot must be of sturdy construction, have a tight-fitting lid, a wide base, and a locking bail handle." Mors Kochanski

The finished Urban Bushcraft pot meets all of these requirements plus one more - it's almost free.



Bonus Features

The Smooth-Edge Lid

There are lots of videos on-line about using the “smooth edge” can opener to lift a lid from a can that will seal quite snugly back into place once the can is emptied. In fact, there are some cans that create a perfect lid for your ration cup using this method.

That’s great, but it’s just another piece of technology that gives you a quick-fix without learning much. To increase the security of the fit and still learn what it takes to create such a lid, cut out friction tabs from an extra can, and rivet them in place. They should be spaced-in slightly from the edge to allow the lid to properly seal. You get a nice clean fit but you still apply some new skills to solve an old problem.



Left: Joe Brandle Photos (credit) Riveted tabs
Below: Pot lid with tabs



Add A Spout

By crimping the rim with a pair of needle-nosed pliers, you can create a pour spout anywhere along the rim. Simply grab the rim and turn your hand 90° in one direction. Move over about ½ inch and repeat the twist in the opposite direction.

The spout is also functional by letting you know when the pot boils without having to lift the lid.



Make It Safe

All tin-lined steel cans are coated with a food-grade epoxy or lacquer lining. This lining contains BPA which may leach into foods over time. However, we have been using them without worry for decades. But it seems that when someone proposes using a tin can for cooking, all hell breaks loose. I have been cooking and eating from tin can billies for 50 years and I still only have one head and my children all have the proper number of fingers and toes. To make your can safe, simply turn the can upside down on a fire and let the lining burn out. It will first appear like paper flaking from the can walls. Let it continue to burn until everything is gone, then scrub it out. Make sure that when the can is not in use, it is thoroughly dried or it will rust. Will rust hurt you? No - it’s oxidized steel. If you want to protect it, simply rub a food-grade oil on it that won’t go rancid and it will prevent rust. To prevent rust over long-term use, “season” the can by rubbing it with lard or fat. Put the can in an oven and heat it until the lard becomes liquid. Remove the can from the heat and wipe it down with a rag and let it cool. The grease will enter the metal and affectively seal it from future rust. To eliminate any question at all, simply smash the can when you get home and make another one for your next trip - it will increase your learning curve in a variety of skills.

The Wire Bail

All pots need a bail whether they are used on a stovetop or suspended over a campfire. The Golden Book of Camping shows a quick way to install a swinging handle using picture frame hangers and rivets. We have used both soft copper and aluminum pop rivets for attachments. However, it seems that the contemporary choice is for a pot with a bail that will stand up rather than constantly fall over -

that’s fine for a stovetop pot, but when it’s suspended, it really shouldn’t matter. And, a fixed handle for pouring or draining a pot can be solved by a simple woodcraft kink (see Part 5 - Wrinkles, Kinks and Dodges), or turn the pot so you pour in-line with the handle rather than 90° to it. That said, it’s very easy to punch 2 holes in the rim of the pot and add a wire bail. By using cold-rolled wire (available at farm supply stores), you get a very ridged handle that presses against the sides of the pot and will stay right where you want it. Both of the pots showing the friction-fit lid are fitted with such a handle (Photo 3).

Here’s how to make a twisted-wire handle that gives your pot with that personal touch.

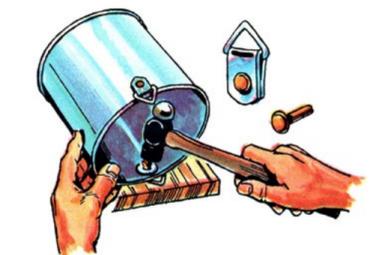
Step 1 - Cut a length of “tie wire” or what we call “bailing wire” (depends on if you’re a carpenter or a farmer).

Step 2 - Insert a hook or eye-screw into a drill chuck and loop the wire through it.

Step 3 - Clamp the free ends of the wire into a vice or have a partner hold them with a pair of pliers and gently pull back.

Step 4 - Slowly turn the drill until the bail twists as tightly as you want.

Step 5 - Cut the loop away from the eye screw and insert the bail into the pot. Turn the drill slowly and pull back gently to get a nice even twist.



1. TO MAKE POT, FASTEN TWO WIRE TRIANGLES AT TOP EDGE WITH TIN STRIPS AND SPLIT COPPER RIVETS.



Tin Can Tech (sidebar)

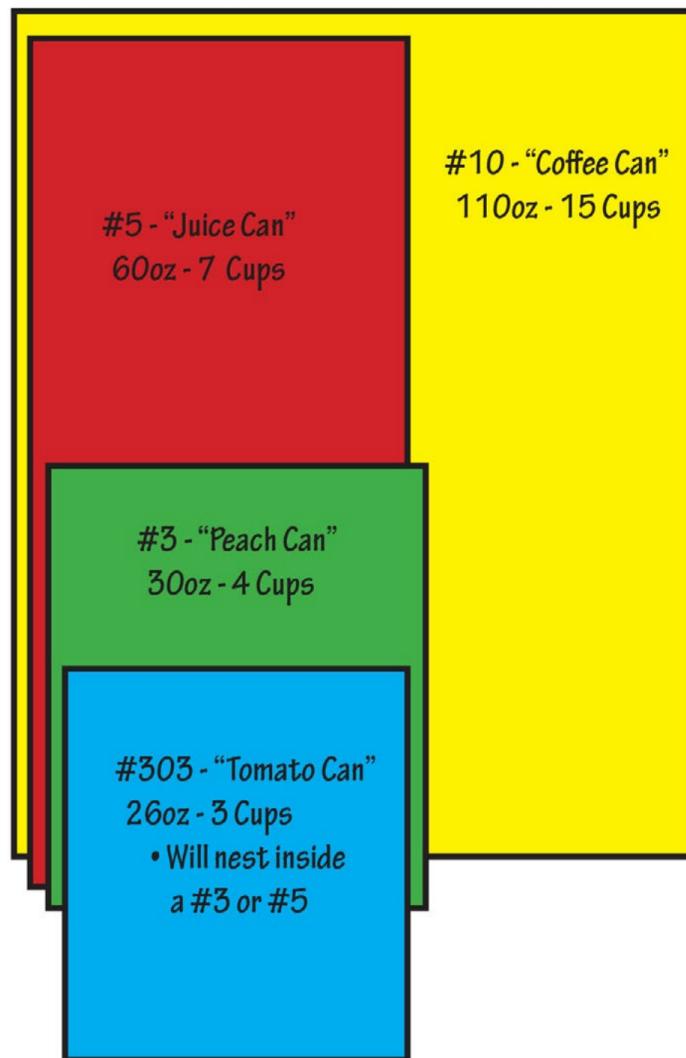
Information on can sizes today can drive you nuts – they are described either in measurements down to 1/16 of an inch or U.S. “customary” cups. Older can terminology, however, used a simple number to identify can sizes most commonly used as billys –

- 11oz - #1 or “picnic can”
- 20oz - #2 or “soup can”
- 32oz - #3 or “peach can”
- 58oz - #5 or “juice can”
- 110oz - #10 or “coffee can”

Since we share a common language that is divided by technical difficulties (Metric vs American), we need to establish some ground rules. We are going to use a standard US cup and ounce (oz) measurement to talk about pots. You might need to translate those into liters, milliliters, cubic centimeters, etc., or Imperial cups and ounces.

Comparing capacities of cups and cookers, whether tin can or commercial is a frustrating process – there is no consistency in how they are sized or marketed. Even the same manufacturer will switch from CCs to MLs, to OZs to Cups when describing one cup/pot vs another in the same catalog. One even markets their pot by the size of the open top rather than its capacity. When reading about a #10 can, it is listed with a 12-13 cup capacity, but it is easy to put in 15 cups. Also, most of the measurements are never quite how they are marked on the can size graphs.

The only way to get what you want is to pick a unit of measure and fill them up; fill to the brim for “total capacity” and then remove enough water to account for moisture lost to the atmosphere during the cooking process as well as accommodate food for a “functional capacity.” Example – When cooking in a #10 can, put in 12 cups (a little over 2/3 full). Bring the water to a boil and add a handful of lentils and one of rice. Cook until they start to get soft, stirring occasionally and don’t allow the pot boil to over. Add thinly-sliced vegetables – potato, carrot and onion – and cook until soft. Add 6 chicken bullion cubes. That should fill four 16oz-2 cup ration pots with a little left over. It takes practice to do this and not scorch the food by overheating and boiling the pot dry.



Top: Students learning to use simple tools – hammers, pliers and snips – to turn an edge, set rivets, and attach a bail.

Left: Applying the principles learned about biomass fuel efficiency, stove and heat exchanger design and cooking in a billy (Part 4 of this series).