2-day $20-$50 Blacksmithing Forge

by **katanakreater** on November 12, 2008

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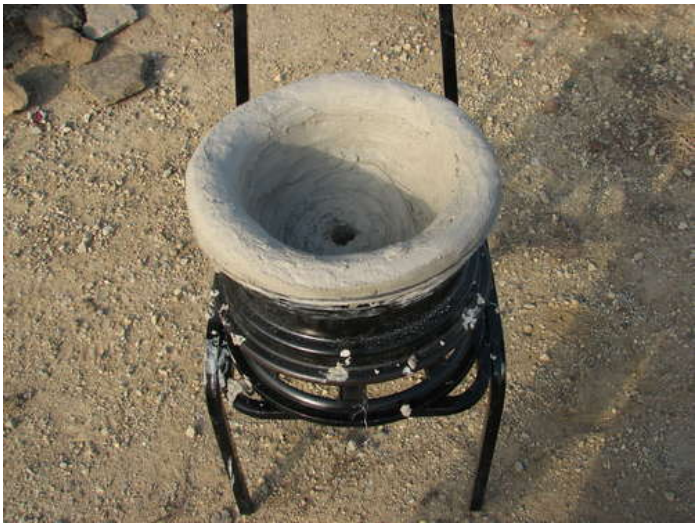
A How-To on how to make a small forge



step 1: The Stuff

Clay- From a potters-shop

Fan- From one of those tacky iflatible palm trees

Metal Chair- I got one from my church

Safety Wire- $5-$10 at hardware shops

Big Speaker- Found an old steel one at my church as well

Quickcrete- $3 on sale

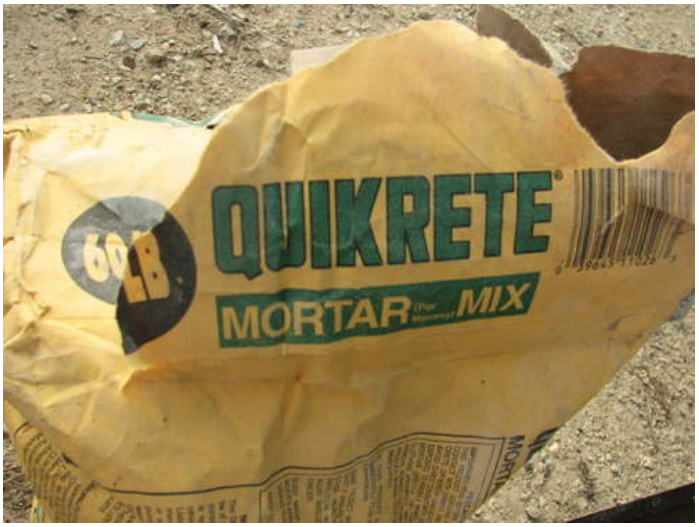
Light Fixture- Got an old one from my chicken coop ($5 new)

Steel Pipe- Found behind my church, probably could be found at a junkyard

Tire Rim- can be found at a junkyard to

A Hack Saw- Every man should have one of these

I think that covers it- on to Step 2



step 2: The Quickcrete

Get a burlap sack and put about 2-3 lbs of DRIED clay and pound with a sledge-hammer until the clay is a coarse powder.

Mix the Quickcrete according to the instructions
I mixed about 3/8 bag of quickcrete to 3/4 gallon of water.

Put the water, Quickcerete, and clay in a 5-gallon bucket.

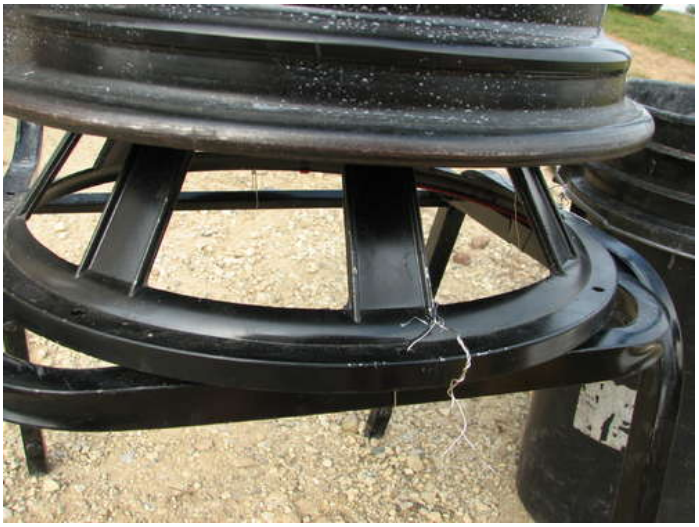
Mix the mix until it is kind of like grey mud.

step 3: The Stand

With the sledge break of the seat and backing of the chair.

Strip the speaker of the paper, the magnet, and copper coil until there is nothing but metal left.

Attach the speaker to the chair with the satey wire make sure it is very surdy (you may weld if you like).

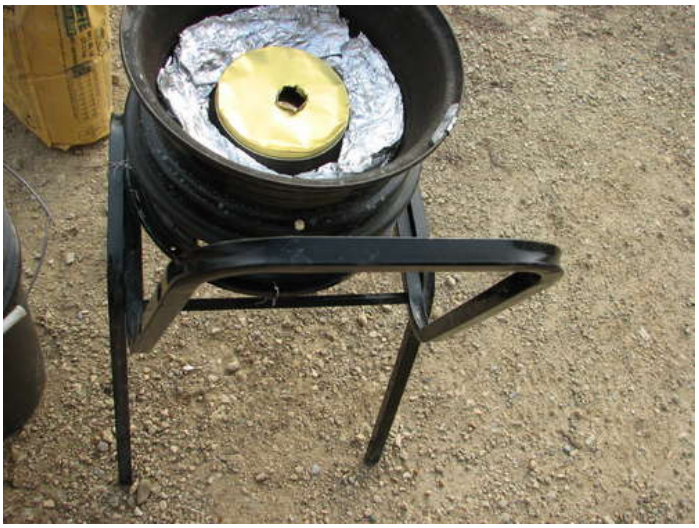


step 4: The Guts of the Heat

Get the lid from a Boy Scout popcorn tin and punch a hole the size of the steel pipe.

If holes are in the tire rim put tin foil over them (several layers thick).

Put the lid of the BSA tin over th axel hole on the tire.

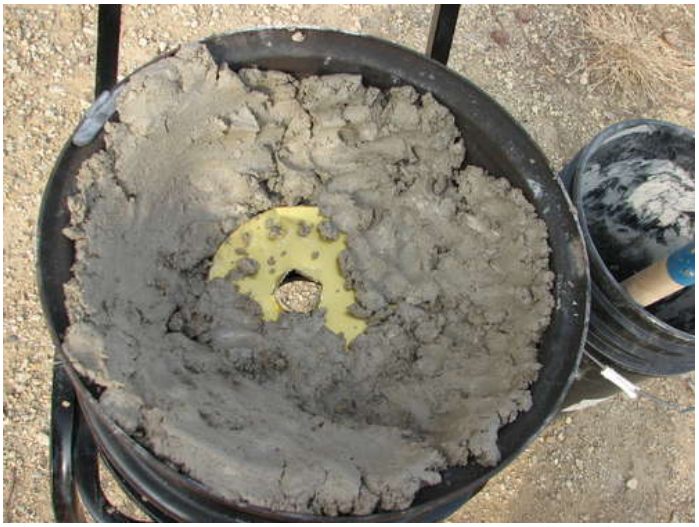


step 5: The Heat

The Quickcrete should be ready. In globs, put the quickcrete/clay on the tire rim.

Be very careful to allow no air pockets under the crete, as they will explode, and hurt.

After the layer of Quickcrete is 3in-4in thick, smooth the surface.

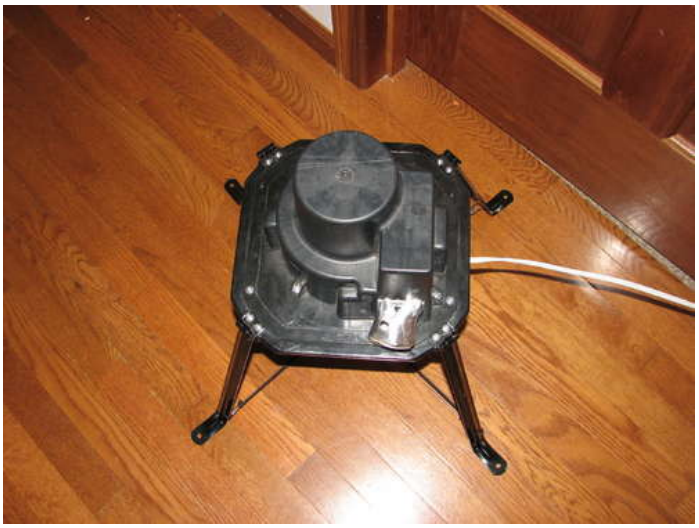


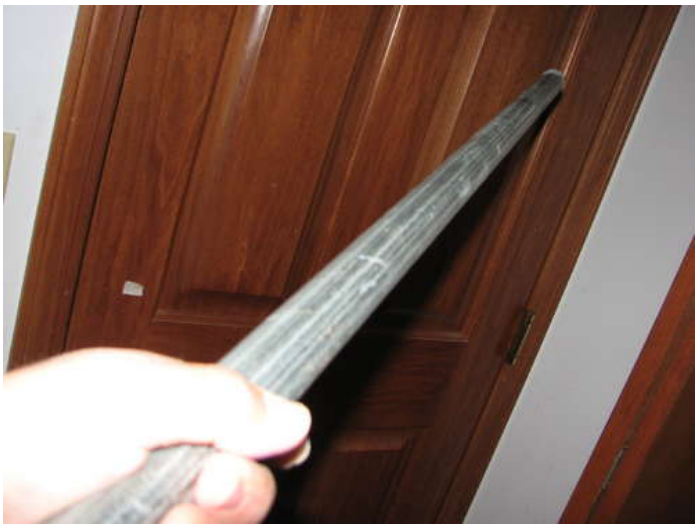
step 6: The Fan

Cut the light fixture at the top. cram inside the "blowhole" of the fan.

Using the hack-saw, make a 1in long "V" cut in the pipe appx. 10-12in from the top.

Put the long end in the fan, and put the other end in the forge(I did this before I adhered the Quickcrete).





step 7: The Pride

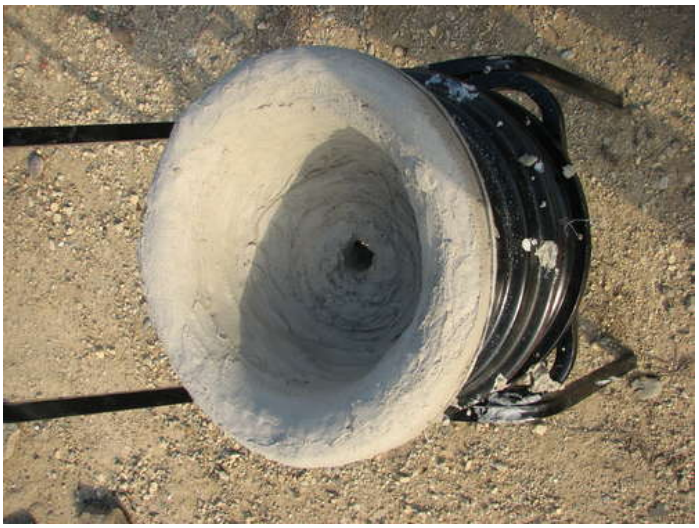
Stand back and gawk at your new creation. Smile because it is time to test it.

Warning: Heat slowly because the fire will expand any air hole and destroy parts of your beautiful forge.

You are now done.

Tell me how yours worked, but if you die, it is not my fault.

If you have any questions, ask, it is better to be safe than sorry.



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Comments

44 comments **Add Comment**

Roger4Wheel says: Sep 29, 2009. 12:44 PM **REPLY**

He didn't use concrete (sand cement and gravel). He used mortar mix (sand cement and lime). quick-crete, kwick-crete, and others are just BRANDS of concrete type products.

If you have a bunch of fire brick (broken or not) from an old chimney or fireplace, you can break then grind it up into a course powder and when mixed with fireplace mortar will make a nice mix to use for forges (not for iron or steel melting)

petzlglyph says: Jul 24, 2009. 10:14 PM **REPLY**

Fire clay is available from most masonry suppliers it is used for building fireplaces. I should be fired before it dry's out. I just used it to build a melting furnace and had no problems with exploding, just a few small cracks into which I placed more fire clay before the next firing. I used a mixture of two parts 60 grit silica sand and one part fire clay. The first firing needs to be a long one to cure the fire clay. I filled it with charcoal (Bar-B-Que type), light the charcoal and let burn till all of it is ignited (lots of steam will form). Then turn on the blower (low if possible) until all of the charcoal is consumed. then cover the top with a (dry) stepping stone or something non combustable to hold in the heat until it cools on it's own. The charcoal produces nasty fumes do this outside. Great Instructable, I like your use of available resources!

Diverguy83 says: Dec 31, 2008. 8:44 AM **REPLY**

i dont know about using concrete cause that crap explodes when heated to high temps ... i just went to the pottery shop and got some fireclay for pretty cheap plus i use a brake drum and i havent had any problems making knives with it.

skaar says: Jun 20, 2009. 3:33 AM **REPLY**

if you look at the diy foundry sites, you'll find that a mix of cement and vermiculite works well as a refractory, so it, can't be too bad to use cement. i think maybe it's the rocks in concrete that crack, but there's no rocks in the clay/cement mix.

katanakreater says: Jan 4, 2009. 7:46 AM **REPLY**

Great. I couldn't find fireclay for a reasonable price or anywhere near me. How much did you pay for yours? And concrete is a little unsafe when first exposed to the heat, so if making a forge from quick-krete/clay use precaution when first using. And also, my forge isn't waterproof, so don't let it sit in the rain.

grimcat27 says: Mar 8, 2009. 1:14 PM **REPLY**

you can use kitty litter but it has to be crushed up first. It will not work whole an old blender and some window screen works well and oh yeah some time and Patience too. (maybe an hour or two to get a few LBS)

Diverguy83 says: Jan 5, 2009. 8:34 AM **REPLY**

no i keep mine in the garage but as far as the fireclay goes i just looked up a rinker materials plant and picked up a 50 pound bag for about 23 bucks after taxes.

Evilblaze says: May 16, 2009. 5:06 AM **REPLY**

Wow, nice instructable. What do you think, can I make a foundry to melt titanium with a similar way like this? The titanium melts at 1700 Celsius, it means much more heat needed than in this case (aluminum melting).

The titanium is produced this way: http://www.instructables.com/id/How-to-make-titanium-metal/

katanakreater says: May 16, 2009. 12:04 PM **REPLY**

Hmm I don't know if my forge would be capable of producing such temps. of 1700 Celcius (3092 F) nessesary for forging Titanium. It may be able to get the metal red-hot, but probably won't melt it. I am currently working on a new instructable for a different forge that may suit your purposes. Did you actually make Titanium, I saw that article in PopSci-Gray Matter and really wished I could do that. Thanks for the comment!
--KatanaKreater

Thundertydus says: Apr 4, 2009. 3:37 PM **REPLY**

Damn, I Died.. If i could sue you... Hmmm..

trf says: Mar 24, 2009. 12:46 AM **REPLY**

i used refractory cement...proably the most durable thing there is for a forge. Put some in a wheelbarrow and add water till u get the consistency you want. I kept mine stiff. I just globbed it in there and smoothed it out. If youd like to see my forge, visit
http://www.instructables.com/id/How_To_Make_A_Bladesmiths_Forge/ .
I will be adding more pictures of usage and such in the coming days on my next project.

ebothwell1 says: Dec 3, 2008. 4:20 PM **REPLY**

This will work, but I would add a few more safety and performance caveats.

1. Concrete is not refractory. It will fail eventually; quite possibly not at a good time. Be certain to allow a bunch of old coal to be between the fire and the concrete to try and keep it from over heating.

2. The rocks in the concrete may not be the right type; this is especially a risk with quickcrete. Some rocks explode when heated. Not usual, but possible. Best to use a cement which is heavy on sand rather than rocks

3. Yes, as ichbinoadie notes, the concrete must be completely cured before using the forge. Otherwise it will steam, and possibly pop or explode.

4. jjhammerstein et al note a break drum forge is an good option for a home made forge. It is designed for a higher temp tolerance than concrete.

Remember, things that *unexpectedly* go boom are bad...

katanakreater says: Dec 28, 2008. 12:12 PM **REPLY**

Yes, very unsafe but don't be stupid.

n0ukf says: Dec 7, 2008. 9:17 PM **REPLY**

One reason rocks explode in fire is because of trapped moisture becoming steam. I've seen rocks from the lake shore explode when used to ring a fire due to the steam pressure.

Before you start forging with a lined firepot, you'll want to make sure the lining is fully dry. The thicker it is, the longer it needs to dry. Just because concrete or furnace cement is hard, doesn't mean it's dry yet.

ebothwell1 says: Dec 9, 2008. 6:31 AM **REPLY**

Exactly! I would encourage anyone, man or woman, with a real interest in the craft to find a teacher and take up hammering; but you have to be smart about it. The safety factor has to out weigh the cool factor, our it won't just be minor burns and injuries you'll collect along the way.

The work is fun; but, *it is work* . However, there is no better reward than making something that didn't exist before you put your sweat and your energy into it.

ichbinoadie says: Nov 17, 2008. 3:04 PM **REPLY**

Slow-curing something like this is VERY important. I might also suggest you put some thick perforated plate or a bar stock grid over the hole. Clinkers will clog that in minutes if you ever managed to fire coal in there. It also looks a bit deep to me. You don't need anything larger than a brake drum for a small-ish forge because without a large series of tuyeres (air holes), only a small area of fuel is getting sufficiently heated, anyway. A metal table built around the brake drum holds extra fuel to be raked in as needed.

I'd be curious as to just how hot this thing actually gets. What size bar stock did you heat in that pic? I know from experience that you can get thinner stock well past cherry red in an old Weber kettle grill with commercial charcoal briquettes. Heck, you can smelt with nothing but mud, clay, and bellows. Not easy or efficient, but doable.

Hope my commentary was at least mildly constructive. Great to see people actively DIYing blacksmithing/casting type projects.

Finally, a disclaimer: My comments are mostly scholarly, not experiential. Hard to play with fire on almost any scale in a rented house with no yard right off a commercial street in a college town. But I've done my homework relatively thoroughly and have spoken with several people quite in the know. Take it or leave it.

katanakreater says: Nov 18, 2008. 12:34 PM **REPLY**

thanks for commenting about dangers. I don't have a thermometer that goes over 300 degrees F. the "bar stock" I am not sure as to its size, but it was about as big around as my thumb.

redhand rik says: Nov 27, 2008. 8:24 AM **REPLY**

what you need for a thermometer is a pyrometer... it's the same thing but a much higher temperature capacity... be careful though, they can damage your wallet . with experience you can guesstimate temp by color. that's what was used throughout history

jjhammerstein says: Nov 12, 2008. 3:09 PM **REPLY**

It's much easier to use a brake drum from a truck for your fire bowl.
I found mine on the side of the highway somewhere.

It has the same thermal mass qualities, and I'm pretty sure junk car lots are easier to find than pottery supply shops.

Cheaper too.

n0ukf says: Nov 18, 2008. 10:27 AM **REPLY**

Why would you want thermal mass in your firepot? More thermal mass takes more energy (more coal) to heat. Also, while the wider pot of a truck brake drum would give you more working area for the 'fire', you don't want the pot very deep if you want to heat anything very long (like say, a larger dagger or sword for the blade makers).

I've tried to work with a deep firepot, but to heat the middle of a longer piece, I had to either build the fire way up or bend the piece to get it down into the coals (coke). That's why so many smiths will have a more table type forge with the fire built up more in a pile. There is a firepot below the surface, but it's not that deep.

You can go to Anvilfire to learn more, they're very helpful there.

Starshock01 says: Nov 15, 2008. 6:56 AM **REPLY**
yeah while brake drum forges are nice they have barely enough room to make a decent knife, unless your using a monster truck drum

jjhammerstein says: Nov 15, 2008. 3:34 PM **REPLY**
I use a monster brake drum. :D

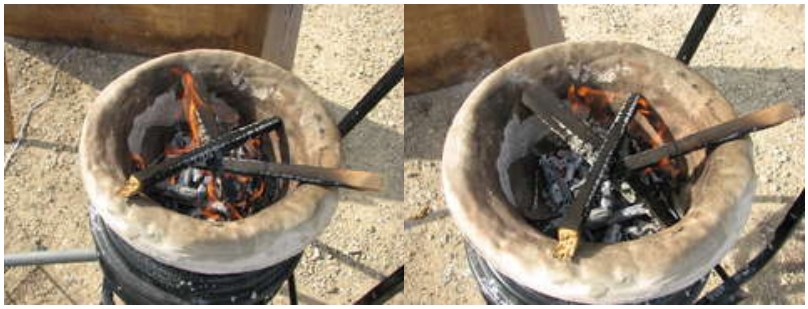
katanakreater says: Nov 13, 2008. 4:44 PM **REPLY**
I got the clay from my uncle for Christmas last year. Where I live pottery clay is about $1-$2 a pound so 3 lbs. isn't hugely expensive.

But I agree that car pieces are easier to find.

canida says: Nov 12, 2008. 12:01 PM **REPLY**
Nice!
Any pictures of your forge in use?

katanakreater says: Nov 16, 2008. 5:52 PM **REPLY**
here are the images, at night

katanakreater says: Nov 13, 2008. 5:21 PM **REPLY**
Yes sorry I meant to include these with my Instructable, but I forgot so... (also this is the wood when I was first testing it.)



katanakreater says: Nov 13, 2008. 5:29 PM **REPLY**
An add-on to the previous comment; I couldn't take a picture of the metal red-hot because need 2 hands to handle the metal and a hand to take a picture.

Since I don't have 3 hands, I can't take the picture...yet.

handidad says: Dec 5, 2008. 9:23 PM **REPLY**
Doesn't your camera have a timer?

katanakreater says: Dec 6, 2008. 3:04 AM **REPLY**
no; it was $5

katanakreater says: Dec 6, 2008. 3:09 AM **REPLY**

But I used my moms camera.

n0ukf says: Nov 14, 2008. 9:40 AM **REPLY**

Don't you have friends or acquaintances that can handle a camera?

katanakreater says: Nov 14, 2008. 6:26 PM **REPLY**

That is why I said yet maybe by Sunday I will have a picture.

Father Christmas says: Nov 14, 2008. 11:25 AM **REPLY**

this may come in handy. thx.

mrthumbtack says: Nov 13, 2008. 7:48 PM **REPLY**

awesome!

when they kick me out of art school for the summer and don't have access to the oxygen powered forge for 3 months maybe i'll build myself one like this

jalapeno1 says: Nov 13, 2008. 2:13 AM **REPLY**

I like it. Good job!

katanakreater says: Nov 13, 2008. 4:45 PM **REPLY**

Thanks.

cowscankill says: Nov 12, 2008. 1:09 PM **REPLY**

Nice job! But what do you use for heat? Just coals?

katanakreater says: Nov 13, 2008. 4:40 PM **REPLY**

At first, to make sure it didn't explode I put wood in it. I have tried charcoal and that seemed to work.

thoraxe says: Nov 12, 2008. 4:10 PM **REPLY**

charcoal or coal.

cacci says: Nov 12, 2008. 4:33 PM **REPLY**

About how hot does your forge get?

katanakreater says: Nov 13, 2008. 4:35 PM **REPLY**

I have not exactly *measured* the temperature of the heat, but since it got bar of steel red-hot, I am guessing it was around 1100-1200 degrees F.

Bard says: Nov 12, 2008. 3:25 PM **REPLY**

Is the dried clay quick-crete mixture a homemade version of fire brick?

katanakreater says: Nov 13, 2008. 4:27 PM **REPLY**

Yes, only I can kind of mold it instead of having induvidual bricks.

casey_myers says: Nov 12, 2008. 1:21 PM **REPLY**

Very cool. Could come in handy if the economy sends us to the Stone Age too!