

Introduction Thanks for volunteering to help at a construction site. Your efforts will make a difference not only to one particular family in need of decent, affordable housing but also the whole neighborhood.

In this [Construction Volunteer How-To article](#) we discuss how to use a sledge hammer. Some of the work that construction volunteers perform involves swinging this simple-minded tool. From watching movies of rock-busting chain gangs and spike-pounding railroad crews you might think swinging a sledge is easy, and you'd be right, but only if you use the correct technique.

Table of Contents

Sledge hammer described	1
Purposes for a sledge hammer	1
Why swinging a sledge well is difficult	2
The technique for swinging a sledge hammer	2
Pickaxe	3

Sledge hammer described [TOP](#)

Typical sledge hammers you'll find on construction sites have wooden or plastic handles about three feet long, and the heads weigh from a puny 5 to a whopping 16 pounds.

Sledge hammers perform the same function as striking an object with a regular hammer, except that the amount of force is many times greater. Furthermore, the handle is so long that it is usually operated using two hands. It is the combination of a heavier head, a longer lever arm and a two-handed swing that delivers a momentous striking force.



Purposes for a sledge hammer [TOP](#)

Sledge hammers are used for several purposes on job sites.

- Sledges and [pickaxes](#) can be used to break up rock or concrete. Sometimes you'll need to break up rock that is in the way of a hole being dug, and sometimes you'll need to smash up concrete into manageable pieces. When you perform such activities using a sledge or a pick *you should wear eye protection*, because if you're doing it right, those chips will be flying really fast.
- When we build retaining walls out of railroad ties, those timbers are connected to one another with lengths of reinforcing rod, and that re-rod can be driven into the wood with a sledge.
- Another use for a sledge, often a relatively delicate one, is to move a newly raised wall into position.

If you're lucky enough to be scheduled for a day when we're raising walls, you and several of your fellow volunteers will get to experience how satisfying it is, when everyone works together, to safely raise such a huge amount of wood all at once.

After you've made the big lift, the wall will rarely sit exactly where it should be, and that's when your sledge hammer can become useful. You whap into the bottom of one end of the wall with your sledge, and the whole thing moves a little each time. People will be telling you whether to hit harder or softer, and with each whap you get closer and closer until finally everyone yells, "Stop." Also satisfying.

- And once an exterior wall is in position on the deck, it has to be stabilized so it will be held in the correct position. A common method of stabilizing such a wall is to drive a *stake* into the ground and nail a long board – a brace – from the top of the wall down to the stake. Below we'll use the example of driving a stake to demonstrate how to really apply all the force a sledge can deliver.

Why swinging a sledge well is difficult [TOP](#)

There's a technique to swinging a sledge, especially when it must be done at a precise angle from a precise place. Anyone can use a sledge at all, but when it comes to the application of a precisely angled blow, with the face of the hammer angled precisely at the moment of impact, and then actually hitting the exact target precisely, that's tougher.

But when you add in the most important factor -- which is that you want to strike with as much speed and power as possible -- the chance of success drops dramatically. Hammering nails well with a framing hammer is tough enough. Even carpenters miss every so often.

So is using a sledge well harder? Well, (1) unlike a framing hammer, a sledge requires you to swing from your feet up, not just your shoulder; (2) you probably aren't standing on a firm, flat, dry, level surface; (3) with a sledge your hands are a lot farther away from the target; (4) a ten-pound sledge weighs seven times more than a framing hammer and ten times more than a regular 16-ouncer; (5) the sledge describes a much larger downward arc than a hammer and takes longer to get there, thus introducing even more chances for error; and (6) introducing yet more chance for error if you're a novice is the fact one of your hands is actually moving along the length of the handle during the downward swing. So yes, using a sledge well is harder. And a lot more tiring.

The technique for swinging a sledge hammer [TOP](#)

For this example we'll assume you're driving a stake into the ground to nail a brace to. Such a stake must be pounded in quite firmly, because if the stake moves then the brace that's attached to it will move, which means the wall it's attached to can move. If the wall moves -- even a little bit -- that can be really bad down the line.

Ringing the bell to win the Kewpie doll at the Sledge-o-Matic game at the county fair is 10% strength and 90% technique. That's why they use a short, skinny guy to run that booth. He demonstrates how easy it is to ring the bell, so you figure you can do it too, and you can't. The difference is that he had learned the technique, and now you will too.

Here's the technique (for a right-hander).

- (1) Grab the butt end of the handle with your left hand.
- (2) Holding the handle near the head with your right hand, raise the sledge up in the air and over your right shoulder, then take a beat.
- (3) If you haven't already done so, position your left foot ahead of your right foot; it's your left foot that will take your weight by preventing your from falling forward after the hammer blow, not your right.
- (4) When you're positioned just right relative to the target, begin the swing by using your right hand to raise the hammer up away from your shoulder. You want to get the head higher because the longer is the arc of your swing, the more time you have to let your muscles and gravity add up to a more powerful impact.
- (5) Keeping in mind that at this point your right hand is still up near the head, just as you're about to swing, bounce up onto the balls of your feet a bit in order to get the hammer started down from an even higher elevation. If you've never swung a sledge this might seem like overkill, but if you've swung a sledge a lot you probably don't even realize you do this, but you do do it naturally, every time, and you should. Remember, this is how to swing with maximum force.
- (6) Then, keeping your eyes fixed unwaveringly on the target, just pull that rascal down as hard as you can, using all of your muscles from your legs to your waist to your shoulders to your elbows to your wrists to your hands. As you are doing so, allow your right hand to slide and push down along the handle toward your left hand.

There's a reason a mop handle is round and a sledge handle is not. Whereas a broom or rake or shovel handle is circular in cross section, the handle of a striking tool's is usually oval, with the long dimension parallel to the direction of the strike. Whether you're swinging a sledge hammer or a framing hammer or an axe or a pick, it's useful to have the tactile feedback through your hands of the orientation of the striking surface, and you couldn't feel that as well if the handle were round.

It might surprise you to learn that even though your right arm is the stronger one, more of the sheer power of the blow comes from your left arm. It is your left arm that provides more of the brute downward-pulling strength, whereas your right arm provides more of the steering, more of the delicate, microsecond-by-microsecond

adjustments that you make naturally, without thinking about it, without having time to think about it, because all of your mental energy is focused on the target, as it should be.

(7) Then just go ahead and finish the swing in such a way that

- (a) you strike the center of the target,
- (b) the center of the target is struck by the center of the face of the hammer,
- (c) at the moment of impact the face of the hammer is parallel to the target, and
- (d) at the moment of impact the motion of the face of the hammer is parallel to the direction you want to drive the target.

(8) Do this over and over again till whatever it is you're whamping on has been whamped on enough, then take a break. (If you're a novice, the rule for driving a stake into hard ground is that when you're quite sure it won't go any deeper, hit it sincerely at least two more times.)

- Try to hit the center of the head of the stake. Each time you hit off-center you'll break away more of the relatively delicate end grain of the wood, which means you're shrinking your target for the next blow.
- If you're gonna miss, try not to miss by swinging past the target altogether and slamming the top of the handle onto the target. If that happens often enough the handle will break. Promise.

Pickaxe. Although we refer only to sledge hammers above, the advice on how to swing one hard applies equally well to a similar long-handled tool you might use, a pickaxe. Whereas a sledge can be used to break up rocky materials, the chiseled point (the *pick*) on one end of the head of a pickaxe is specially designed to do so.



The other end is a kind of sharpened hoe blade, which can be used as a lever to shift around the broken rock. This axe end of the pickaxe can also be used to break up hard earth or cut through roots. Unlike a sledge hammer, the pickaxe blades, especially the axe end, *can* be bent if you apply enough force, so please don't.

Using these powerful hand tools well is not easy for most novices, but it gets easier with practice, so bear down and try hard.

We thank you for volunteering to help build a house, and we hope you find the experience pleasurable and educational and worthwhile.

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Return to: | [The home page of this How-To series](#) | [Barelybad.com](#) | [HabitatKC.org](#)