

Handy Tricks 7: Bike Mods and Projects

by [TimAnderson](#) on May 29, 2008

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Author: **PRO** [TimAnderson](#) [author's website](#)

Tim Anderson is the author of the "Heirloom Technology" column in Make Magazine. He is co-founder of [www.zcorp.com](#), manufacturers of "3D Printer" output devices. His detailed drawings of traditional Pacific Island sailing canoes are at <http://www.mit.edu/people/robot>.

Tim's philosophy involves building minimum-consumption personal infrastructure from recycled scavenged materials. Redirecting the waste stream. Doing much with little. A reverse peace-corps to learn from poor people all over the world.

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Intro: Handy Tricks 7: Bike Mods and Projects

Handy Tricks Seven! Things to do to and with bicycles!

To see even more handy tricks, check out the rest of the saga at

[Handy Tricks 9: Oodles of random tricks](#)

and [Handy Tricks 8: Island Handy Tricks](#)

and [Fifty Handy Tricks](#).

and [40 More Handy Tricks](#)

and [Australian Handy Tricks](#)

and [Guatemalan Handy Tricks](#)

and [Yet More Handy Tricks](#)

and [Handy Tricks Six!](#)

For a bunch of things that didn't work, check out [How Not To](#).

First trick: **Improved Freewheel Removal Wrench**

Every brand of freewheel has a different pattern of grooves inside it. If you don't have the right wrench you usually can't take it apart. Unless you can improvise one. This method works well for the most common shimano freewheels.

Remove the axle from the wheel.

Insert the biggest hex wrench you can find into the freewheel. Pound some nails or a big staple as seen here into the grooves to lock the wrench in place. Unscrew the freewheel. Wiggle the nails out.

Rejoice.

To learn about why you'd use this tool, what the real one looks like, and everything else about bicycle mechanics, look at [Sheldon Brown's site](#) and [Park Tool](#).



step 1: Chain Whips

These two fancy "chain whip" wrenches are used to disassemble a freewheel. The "freewheel" is the cone-shaped cluster of sprockets on the rear wheel. The little sprocket unscrews and the others pull off, with spacers between them.

To make a chain whip, use your "chain breaker" tool to take a chain apart making two pieces of chain with as many links as seen here. Then drill three holes in a piece of steel bar and grind a curved divot where the short chunk of chain rests. Use the chain breaker to attach the chunks of chain to the steel bar, and you're in business. If your breaker doesn't reach to attach the chains to your wrench, just pound the pins in place with a hammer.

You probably don't need two of these, but it's easier that way and they're quick to make.



step 2: Wheelchair = Bike Wagon

Pretty simple to do. Take the canvas back off the chair and innertube lash two sticks to the arms or seat. Cut the curved tube off the back of a metal chair. Lash that to the two sticks at the bike end.

Lash a loop of cord to the middle of that for a trailer hitch. To hitch up, innertube lash that loop to your seat post or rear rack. Looks like someone has taken one of the wheelchair's wheels, but you get the idea.

This is a strong wagon. It'll carry a lot of lumber.





step 3: Spoke Nut Screwdriver

This is the quick way to remove spokes.

Grind a slot in the middle of a flathead screwdriver bit. Don't shoot sparks into your eye.

Then spin the spoke nipples off the spokes with a drill just like Franziska.

If it's a rear wheel you might need to remove the freewheel to get the spokes off.

Save the spokes. In the U.S. they're often made of stainless steel and make good TIG welding rod etc. etc.





step 4: Stretch Cargo Bike

Here's Matt Ritter with his "Longfellow" cargo bike.
He's carried a lot of gear and a couple of passengers with it.
He says that with a chain this long you can make it derail if you shake the bike hard while riding it.



step 5: Bike Storage Safe

Bike theft is a real problem in the Boston area. It seems like most of the bike anti-theft inventions come from this part of the country. Here are some funny hinged shells you can lock down over your bike to discourage thieves. They're just outside the Sydney-Pacific dorm at MIT. They're empty, I don't know if that says anything about their effectiveness.



step 6: Instant Bulk Panniers

Emily took me scavenging in Manhattan. We got so many veggies she needed more cargo capacity. I tied loops of twine between two milk crates and hung them over her back basket.

She writes: "My new panniers hold more than a refrigerator and do not fit on the subway elevator. I had to bike a special gradually increasing inclined route tonight up to 175 with all baskets brimming."





step 7: Emily's Instant Basket Supports from Fork

I should have gotten a better photo, but her front basket support is very solid and nifty. It's the front fork from a bike bolted onto her axle on top her other fork's dropouts.



Image Notes

1. I used to be a front fork. Now I'm a basket support.

step 8: Paint a Bike

My cargo bike was rusting pretty badly from alkali Burningman dust on bare metal. My parents decided to paint it. My dad got a can of "forest green" paint that matched the original color and a wire brush. Then they used the same techniques my dad learned on the farm as a boy.

- 1: Use the wire brush to clean off all the loose dirt and rust.
 - 2: Use masking tape to cover the edges stuff you don't want painted (tires and some chrome)
 - 3: Get some pieces of cardboard handy to hold in front of stuff you don't want to bother masking with tape.
 4. Painting motions: Move the can at a constant velocity and don't push the button until the can is moving. Release the button before decelerating at the end of the stroke.
 5. Paint with multiple light passes so the paint doesn't get thick enough to run before it's dry.
 6. To paint the rims, turn the bike upside down and spin the wheels. Hold the can stationary and paint the whole rim as it spins by.
 7. Wear proper safety equipment such as a respirator mask and safety glasses. If you'd rather skip the respirator, wear a "grim reaper" costume like my dad has on.
- The bike looks really great now. People are asking me where I got it and what all the features are for. And if they can buy it from me.



step 9: Key Fob and Business Card Holder

Trouble getting your keys back when you loan them out? Attach them to an aluminum crank. Need a business card stand? A couple of cuts in an aluminum hub will make a nice one. Spotted at Cambridge Bicycle





step 10: Welded Tall Bike

Now that everyone has a welder there are all kinds of bike mods you can do.

Here's a tallbike Star and I made at MITERS with an extra frame welded on to make a banana seat.

The handlebar/fork arrangement turned out really well. It's strong and was pretty easy to make. The bottom handlebar/fork/thingy just shoves down into the side tubes of that motorcycle-style fork.

The seat is made by bolting a crutch handle into the rear old dropouts to keep them from crushing together, folding a nylon cushion and wrapping it onto the frame with innertubes. It's more comfortable than you'd expect. It could be an inch or so wider.

You can see that the front seat frame tube is bending, another tube brace should be welded on to triangulate that part of the frame.





step 11: Arm Chair Bike

Or is it "Chair Arm Bike"?

We made this one using the arm of a danish chair to make a springy seatpost and a fender at the same time. It's innertube-lashed onto some brackets we welded from whatchamacallit "chainstay" tubes. The bike looks like it's made to ride in a swamp.

The steering column is a small thick pipe that just slides into the headset. We drilled a hole through it at the bottom and put a bolt through it and the fork where the fender used to be.

Yes the handlebars are a lot lower than they should be, but we wanted to try out the bike.

It's pretty weird to be so high and crouched over at the same time.





step 12: Amazing Unistrut Traveling Bike Racks

Spotted outside Shaw's, in Cambridge.

Whoever rides this bicycle has clearly figured out how to carry a lot of stuff. Unistrut back racks go a long way. It's galvanized, so it doesn't rust.

The front basket and front panniers are also supported by unistrut.

Galvanized steel means that welding is out, so this uses all-bolt construction.

I normally don't like using unistrut, because it twists around a lot. Bolting them back-to-back solves that.

There's a hidden support behind the white basket on the rear rack, supporting the extra length of the triangle (as compared to commercial rear racks).

The unistrut is extra-neat, because it gives you 2.2 million spots to hook bungee cords.











step 13: Futon Frame Bike Wagon

I met Jess at the Emeryville Traderjoe's dumpster. Jess has an ingenious bike trailer made from conduit, and part of a metal futon couch. Here are some details of how it's held together.

Joe had a problem with his refrigerator and threw out a whole lot of food. This particular location loves mother earth and their fellow man and allows dumpster divers. Thanks Joe!





step 14: Welding Clamp Without Marring Paint

Star says:

I've been learning a ton of stuff from Mars lately at MITERS:.
Need to weld your new chop-tacular? Where do you clamp onto the frame without screwing up the paint job?

THE PEDALS! It works!



step 15: Twin Frame Cargo Tallbike

Mars made this glitzy tallbike at MITERS:

Originally it had a baby wheel riding on top the rear wheel, which made it extra festive.

That blue bundle is my checked bag. I'm on my way to the airport in a hurry.

I spread out a sheet, dumped my stuff on it, tied the corners together making a furoshiki, and off I went.

The bag worked fine, and didn't even have one of those "we ransacked your bag" notes in it at the destination carousel.

The bike has half of a third frame welded on the front, perfect for carrying big loads, such as that blue furoshiki or the two milk crates tied together with an extension cord seen in the second photo.



step 16: Animal Stampede Bike Horn

Have you been searching for the best bike horn ever?

Turns out they're all mis-organized into the "Dog Toys" section at any walgreens.

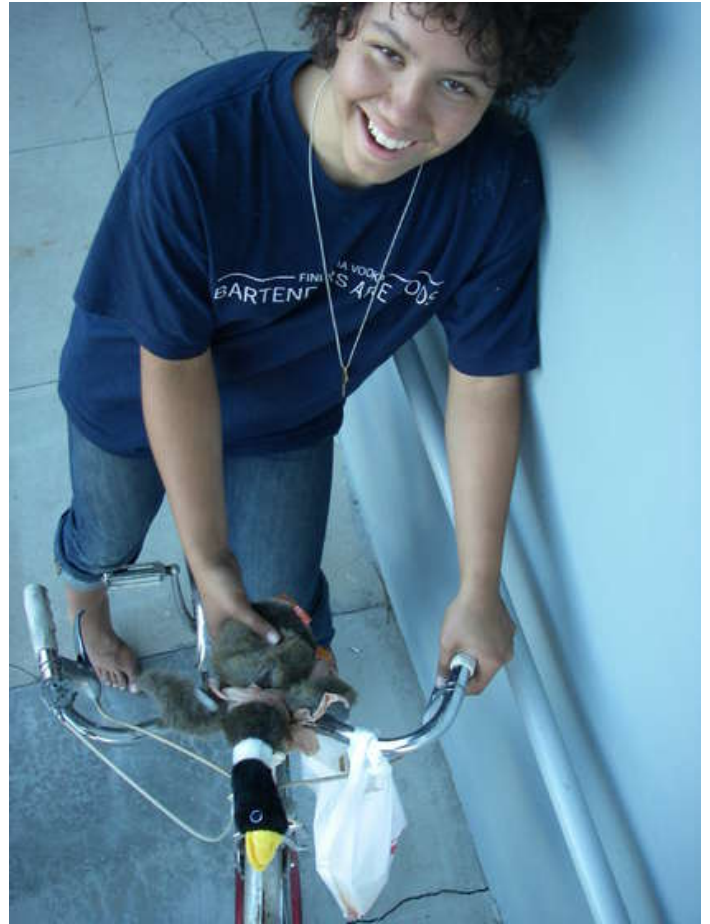
I got this duck-horn duck there, and lashed it to my handlebars with strips of plastic shopping bag (note: another handy trick).

Leaving the store, I honked the duck, because I was riding down the sidewalk and didn't want to hit anyone. A homeless guy sleeping outside leapt up.

"Donny! Did you hear that!? It sounded like a duck!!!"

Donny replied. "It IS a duck. IT IS a duck!" and pointed at me.

Get a bunch of friends together, each with a different animal, and it could be better than going to the zoo.



step 17: Brazillian Delivery Bikes

The bikes in Brazil are all very rugged, and can carry huge loads. I saw one bicycle trucking around 40 gallons of water. They are very popular for delivery in the cities. Everything you could imagine was delivered with bicycles.

Most of them have front baskets supported by automobile springs. The small front wheel underneath the front basket helps with road friction and stability.

I'm a huge fan of their motorcycle-style kickstands.

Each one appeared to be custom-made. They use very thick, strong tubing. The rear racks were especially well supported. The front axle must also be very strong, as the kickstand and the front load are all mounted entirely on the axle.

Bikes with two front wheels and pushcart-style steering tended to have really neat rod brakes using a foot pedal to brake, just like a car.



Image Notes

1. brake pedal
2. automobile leaf springs

step 18: The Mod Chopper

These tiny cruisers had 6 rear-view mirrors mounted on the handlebars, each.

It's probably a reference to English mod culture. After some law passed that required vespas have at least one rear-view mirror, the mods would attach anywhere from four to twenty-two mirrors to their ride.

Spotted in Sao Paulo, Brazil.



step 19: Laundry Bicycle

Star recently lost laundry facilities, but still wants to wear clean clothes.

Solution? Laundry bike!

She can wash her clothes in any sink, and then clothespin garments to the rear derailleurs cable to let it hang dry! It's summertime in Boston now, so the clothes dry out rather quickly, either by virtue of the fresh breeze while biking, or by being parked in the bright summer sunshine.

This works well for the "wear one pair of clothes per day, wash one pair of clothes per day", and can be incorporated into a daily showering routine.

Pants and shirt can be dried at the same time, each hanging over one side of the frame.



step 20: Padded vice is bike mechanic's stand

A junked cafe table provided the base for this vice. A folded towel in the vice jaws makes it into a great stand for working on bikes.



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Comments

50 comments

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HughBothwell says:

Oct 28, 2009. 12:02 PM [REPLY](#)

I would recommend finding a junk seatpost. Drill a hole through it side-to-side about two inches from the top, stick a bolt through, and weld it in place.

Now remove your seat, stick the ground-post in, and clamp your ground on the bolt. Voila! Nice clean ground without paint damage.



MT-LB says:

Oct 1, 2009. 3:12 PM [REPLY](#)

one of the first things in the manual for my welder says "do not run circuit through bearings"



Bidul says:

Oct 14, 2009. 7:59 AM [REPLY](#)

+1

Even if it seems to be a great idea at first sight, heavy current is going to "solder" balls in the ball-bearing. Use any other paint-free metallic area on the frame (seat support, for instance)



csorrows says:

Aug 14, 2009. 12:26 PM [REPLY](#)

I have never heard that stuff called "unistrut" before.



Hycro says:

Sep 23, 2009. 6:14 PM [REPLY](#)

Looking in the last picture there, it kinda reminds me of the corner reinforcements for drywall--those things you put on projecting corners, only thicker...look...it even has the "long" holes like those corner reinforcements...



masterochicken says:

Sep 20, 2009. 5:28 PM [REPLY](#)

Would the spoke nut screwdriver eliminate the need for a set of spoke wrenches?



guerrilla.1 says:

Sep 11, 2009. 2:01 PM [REPLY](#)

actually these are an extension of the Californian low rider car culture. from what I understand these are anything from lightly modified to full on custom construction.



harigast says:

Aug 25, 2009. 12:13 PM [REPLY](#)

lose a finger doing this? that thing isnt a light saber. if anyone has used one alot you know that you cant really chop off a finger unless you wanted to.



sharlston says:

Aug 25, 2009. 9:31 AM [REPLY](#)

hi tim please reply to this comment

do you need any more tricks for this ible cos i work in a bike shop is west yorkshire and i know loads of nifty little tricks



TimAnderson says:

Aug 25, 2009. 10:49 AM [REPLY](#)

please!

actually since you have a bunch, do your own ible and I'll link to it!



sharlston says:

Aug 25, 2009. 11:24 AM [REPLY](#)

well i only have 3 or 4 so ill tell you them and just credit me a bit

ya know the little 3 in 1 oil cans with the red nozzle when oiling small parts i attach a oil can straw to the end for those nifty places

i always put duct tape round the inside of the tyre to prevent big punctures

when im gonna throw away a old bike i always strip it for spare parts like cdbales and chains

if you need pictures ill reply with them



csorrows says:

Aug 14, 2009. 12:41 PM [REPLY](#)

There are holes in your shirt...



csorrows says:

Aug 14, 2009. 12:29 PM [REPLY](#)

To put it simply, DO NOT DO THIS!



sovereign says:

Sep 8, 2008. 9:38 AM [REPLY](#)

step 3: use a vice, or risk losing a finger

WHAT ARE YOU THINKING???



soapy says:

Mar 19, 2009. 2:31 PM [REPLY](#)

Wow, I just saw that! Bit mental to do it that way. Also, in the picture the sparks are flying towards the eyes... which is not good.

However, the odds of loosing a finger is very small. Even if you severed it you'd find it at your feet. (Truly, though, you don't need to worry about a slight accidental touch of a cutting abrasive disc like this. You just get a friction burn, rather than devastation. Yes, it hurts, but it isn't life altering.)



--scare-- says:

Jul 25, 2009. 3:15 PM

(removed by author or community request)



strangebike says:

Jul 6, 2009. 5:18 AM [REPLY](#)

awesome fella but about the quickest way to loose a finger use a vice or grips or just not shower your silly self with the waste as you cut. always show the safest way to do things or some other person following your instructions may well loose the finger you were lucky enough to keep.

other then that great mutant waste bikes !!!



goeon says:

Jul 3, 2009. 9:58 PM [REPLY](#)

great! 5*ed and faved, the chain whip idea was great




g.petinati says:

Jul 2, 2009. 6:51 AM [REPLY](#)


This is the site of the first bike's maker:


http://www.houston.com.br/en/produtos/bike/hybrid/super_forte_carga


 **dagwoody** says: May 14, 2009. 7:36 PM [REPLY](#)
Behind the scenes of the new sequel "Bridges of Madison county 2"


 **mdlmusic** says: Apr 25, 2009. 9:34 PM [REPLY](#)
What a great idea! I picked up a mallard squeaky toy at WalMart for \$5.00 and wired it to my handlebars with twist ties. Got quite a few strange looks when I honked it as I came up behind pedestrians.


 **Schafft** says: Apr 2, 2009. 4:14 PM [REPLY](#)
Shoulda used duct (duck) tape. (insert rimshot here)


 **craig4542** says: Dec 12, 2008. 6:35 AM [REPLY](#)
about using the pedals for a welder ground. this generally is discouraged, since this runs the current through the crank bearings. While it probably won't weld them solid, it will cause some pitting and shorten their life.


 **_soapy_** says: Mar 19, 2009. 2:26 PM [REPLY](#)
It also looks like the chrome plate has been blown off by the current through it, on the crank itself.
Might I suggest fixing the clamp via the handlebars instead? Take off the grip and attach there, and any marking would be recovered afterwards. Any minor damage to the bearings in the steering would be far less likely to lead to issues, too, as the steering bearings never turn a full rotation and are under far less load.


 **Tavor** says: Feb 25, 2009. 12:56 PM [REPLY](#)
I think I have a possible solution to the chain derailing problem.
Add some 'idler' gears in the middle to prevent the chain from bouncing or swaying. In an ideal world, they'd be mounted in the center of that LONG chain run, but anywhere between the front of the cargo section and the front of the back tire should be sufficient.


 **murc** says: Jun 11, 2008. 10:15 AM [REPLY](#)
Nice list!!
How do the baskets stay put when riding over bumpy roads? In picture 3 it seems that there is a black support on the side of the basket..
And what's with the shades while it's dark? ;)


 **Hycro** says: Jan 29, 2009. 1:13 PM [REPLY](#)
Could be for camera flash, or headlights:P...or they just like to wear their sunglasses at night...P

 **paulocr** says: Dec 11, 2008. 2:39 PM [REPLY](#)
The ones with small front wheel are factory made. This model go back to the fifties and perhaps even before that. They are slowly disappearing and motorcycles are taking over.

 **frogmeetcog** says: Oct 23, 2008. 11:02 PM [REPLY](#)
Heeeey...
I do like that.
My dog tends to lose/hide for amusement his toys underneath our furniure, so we have a wealth of assorted dogtoys around our house. I recall last halloween the local Petsmart had a sale, and the dog aquired a softball-sized squeaky Frankenstein. Fairly smooth green rubber, and it made a piercing noise at close range. Even if it had not reeked like a chinese rubber-factory it would have made our dog deaf, but it would be pefect for my handlebars. I can't imagine we threw it away...

 **79spitfire** says: Oct 5, 2008. 2:37 PM [REPLY](#)
Do not ground the welder like this, it will cause pits in the bearings and lead to an early failure of the bearings.

 **smrat alleck** says: Sep 19, 2008. 2:30 PM [REPLY](#)
I used a similar trick during a bike tour. After a day's ride, I would run 2 bungees, from each side of the handlebars, to the rear rack. Gave me lots of room for hanging the day's clothes.

 **Grey_Wolfe** says: Aug 21, 2008. 10:35 PM [REPLY](#)
I like that he's dressed like Death, lol. Most people just take off the wheels when painting.



TheMadScientist says:
signs of things to come if you breathe that in?

Sep 2, 2008. 11:15 PM [REPLY](#)



Grey_Wolfe says:
I don't know, depends on what kind of paint he's using, and how close he stands to the nozzle while breathing it, I guess. haha

Sep 8, 2008. 10:28 PM [REPLY](#)



Grey_Wolfe says:
Probably would be more effective if they were actually bolted down. Something about a bike rack that itself can be stolen doesn't incite me to lock my bike to it, lol.

Aug 21, 2008. 10:32 PM [REPLY](#)

Other than that issue, they look like they'd probably work pretty good. And it discourages stripping, too.



Derin says:
my school once had racks rebared into the concrete of the playground, but they removed it since no bikes are allowed and kids jump on it

Sep 1, 2008. 9:57 AM [REPLY](#)



Grey_Wolfe says:
Interesting to have bike rack and not allow bikes. lol

Sep 2, 2008. 5:27 PM [REPLY](#)



Grey_Wolfe says:
*Probably work pretty well, I should say.

Aug 21, 2008. 10:32 PM [REPLY](#)



JKibs95 says:
grammar'd

May 31, 2009. 5:27 PM [REPLY](#)



Gort says:
I cut on old seat post off so i had a 3 inch piece. I cut that in half the long way or vertically down it . When i want to weld I raise my seat a bit and clamp the halves to my seat post with vise grips. Then i clamp the welder jaw just above the vise grips. Both the vise grip and welder clamp in fastened on the 3 inch pieces of old post. The vise grips keep a good contact to my post and no arcing. If you use the crank arm you may not like what you see the next time you repack those crank bearings..

Aug 3, 2008. 6:55 PM [REPLY](#)



Pierce14u2 says:
You may not want to place the welding ground there due to chances of melting the bearings if there is not alot of contact points for the electricity flow. I have melted Bearings that way before but I think my main issue was that I didn't have the bearings in tight so there was even less contact points.

Jul 28, 2008. 2:41 AM [REPLY](#)



Ko0LaiD says:
i've been thinking of a bike trailer to hold some tunes, like a sub, speakers tweeters radio, etc

Jul 19, 2008. 11:12 PM [REPLY](#)



irritant#9 says:
Looks like Pops chose painting without the respirator!
Might be faster to wipe down rims and other shiny surfaces like reflectors with grease.
My brother told me that is how they painted their jeeps in the Army. Headlights, windsheids and taillights all got greased. Paint applied to other surfaces and then wipe off the grease. Voila!!

Jul 14, 2008. 12:35 PM [REPLY](#)

PS Psell chek sukcs!



josephprivott says:
one note about the welding clamp idea: when doing this, there is the risk that internal metal components in the pedals will begin to arc and fuse together. Or they could arc and lose their smoothness resulting in increased wear or poor pedaling.

Jul 10, 2008. 5:05 PM [REPLY](#)



wedjlok says:
Great ideas. And, wow, you're dad is a Jedi! :)

Jul 6, 2008. 2:46 PM [REPLY](#)



joetinker says:
Em, prolly not a good idea if you value you're ball bearings...

Jul 4, 2008. 12:53 PM [REPLY](#)



mwwdesign says:
Interesting black outfit. Where is it from/what is it for?

Jun 16, 2008. 1:38 AM [REPLY](#)



cliplless says:
Sweet, I was just about ready to do this. I'm building a set of wheels and I stripped one of the nipples. The problem is that the spoke is sticking through the end so I can't use a regular screwdriver.

Jun 12, 2008. 12:31 PM [REPLY](#)



Dr.Paj says:
I think the bike safes are mainly used to keep people from destroying/stealing your wheels. I've seen what people do to bikes that have been left locked up over a Friday night at Purdue. It puts a tear in my eye knowing that my newly painted bike will soon be at the mercy of drunken college students.

Jun 6, 2008. 12:38 PM [REPLY](#)

Just a hint at what they do, they bend the wheel to make a U shape with it. They only bend it if the wheel will not come off of the bike or is chained to something secure. If the wheel comes off, they just steal it.



Ginge says:
This looks like an instructable on how to lose a finger!!!

Jun 5, 2008. 1:30 PM [REPLY](#)

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