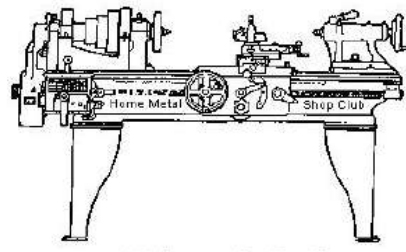




February  
2007

## Newsletter

Volume 13 Number 2



Visit Our Home Page [www.homemetalshopclub.org](http://www.homemetalshopclub.org)

**Statement of Purpose:** *Membership is open to all those interested in machining metal and tinkering with machines. The club provides a forum for the exchanging of ideas and information. This includes, to a large degree, education in the art of machine tools and practices. Our web site endeavors to bring into the public domain written information that the hobbyist can understand and use. This makes an organization such as this even more important. -- Founder - John Korman (deceased)*

<b>President</b>	<i>John Hoff</i>	<b>Secretary</b>	<i>Dick Kostelnicek</i>	<b>Webmaster</b>	<i>Gene Horr</i>	<b>SIG</b>	<i>Dennis Cranston</i>
<b>Vice President</b>	<i>Dennis Cranston</i>	<b>Treasurer</b>	<i>Emmett Carstens</i>	<b>Librarian</b>	<i>Dennis Cranston</i>	<b>Coordinators</b>	<i>Richard Pichler</i>

### Next Meeting March 10, 2007

To be announced.

### Minutes of the February 10, 2007 Meeting

by Dennis Cranston

#### Business Meeting

The business meeting was held at Lyndons BBQ prior to the regular meeting. No business was discussed.

#### General Meeting

38 members attending. John Hoff, president, presiding.

Presentations:

Gene Rowand, HMSC Member, proprietor of Texas Roll Formers Inc., showed pictures of the roll forming machines that he has designed, built, and marketed. Gene makes nearly all the machines that produce flex-duct.





He has also made a large number of the roll forming machines that produce metal siding from continuous sheet stock.



Show & Tell:

Doug Chartier showed a “Wabulator” or a tapered spinning disk machine he is manufacturing to test hysteresis effect vibration sensors.

Joe Scott showed pictures of his a threading attachment for a lathe tail stock.

Joe Williams, who always rescues discarded machines, showed his junk yard obtained and rehabbed small drill press. That must be Joe’s 10-th rescued drill press.

George Carlson showed the toe jack that he made from a bottle jack. See the article later in this newsletter.



Gale Hopsen showed a “PopIt” toe jack that he rescued from a trash heap.



Dick Kostelnicek showed and ran his recently made Sterling fan.



Novice Sig:

The novice group worked on regrinding screwdrivers.



## A Small Toe-Jack

George Carlson

A toe jack is a device that allows lifting of machinery that has very low ground clearance. This jack will lift with as little as 3/8" between the machine and shop floor.

In the past few months I have designed and built several devices for lifting and positioning heavy loads in the shop. The toe jack was built mainly to help position and level my Bridgeport mill. My mill sits back in a corner of the shop. It is fairly easy to "pinch" up the front of the mill using a crow bar, but the back of the mill is fairly close to the wall, limiting the length of bar that can be used.



You can see in the photo above that the jack can slip under very narrow openings. Most commercial jacks require 5/8" or more, but this is a lighter duty unit better suited for the small shop.

The jack consists of only 3three components. The jack itself is a slightly modified 2 ton bottle jack. There is a weldment (I call the foot), that connects to the piston on the jack, and actually does the lifting. There is also a base that extends the front of the jack, greatly improving stability.



There are a couple of modifications that must be done to the bottle jack. First the screw at top of the piston must be removed so that it can be later used to secure the Foot. Rather than try to remove the screw entirely (the threads of the screw a smashed in side the piston, preventing its removal), it is much easier to screw the screw out as far as it will go. Then cut off the screw using a hacksaw. Leave about 1/8" sticking out of the piston. Notch this portion of the screw using the hacksaw. Then use a flat screwdriver to screw the left-over portion down into the piston. It should fall free and no longer be a problem. Clean-up the threads on the top portion of the screw.



The Foot requires a Guide to slide on as the jack is being used. On my jack I used a piece of 2"x1" bar channel to make the Guide from. Since I use 2"x3/8" CRS for the Foot, I had to machine the width of the



Guide so that the foot would not bind. So I machined a little off each side of the Guide to make the width about 1.950". The Guide is fabricated to weld unto the back-side of the oil reservoir. Obviously this requires disassembly of the bottle jack. Be sure to leave plenty of clearance between the top of the base casting and the notches in the side of the Guide. Mine was too close, which prevented the reservoir cylinder from seating properly, which caused leaking. So, make sure when you reassemble the reservoir into base casting, no part of the base casting touches the Guide. The final reassembly of the jack will require refilling the jack with hydraulic oil. This oil can be purchased at any auto parts store. Save the final assembly of the jack for your last step. When refilling the bottle jack, keep in mind that the jack requires very little fluid. I found it was best to fill the jack and pump the jack to its full height. When at full height, the piston uncovers a small port in the side of the cylinder which prevents the jack from being over-pressured, and allows air in the cylinder to escape. When the jack is at full height, all the oil needed by the jack is in the piston cylinder, so pour any extra oil out of the jack. Replace the rubber plug, then, return the piston to the bottom. The reservoir should not overflow when the piston is returned. It can get messy.

The Base of my jack was made from 3/8" CRS. The cutout for the "toe" of the Foot is made about 1/4" wider than the toe. A tight fit here will give you problems so be sure to use plenty of clearance. My toe was 2" wide and the base was 4" wide. This made for two stabilizing "toes" each about 7/8" wide. The Base is bolted to the base-casting using four 1/4-20 socket head cap screws. I've seen other designs where the base was welded on, but welding the CRS base to the cast iron base casting didn't seem like a good idea to me.



The Foot weldment

I made the Foot from 2"x3/8" CRS. The side supports are made from 1"x3/16 steel. I serrated the toe using a slotting saw be for the weldment was assembled. I

don't know if that step is necessary, but it does make the piece look better. Much care was taken when beveling and welding the three main pieces together. A broken weld here could lead to real trouble. The two side supports give added strength, and help hold the foot in the proper position as it slides up and down on the guide.



The finished Toe Jack

Here's the finished jack. The paint, like all the other materials, came from a past project, so it's not pretty, but it sure does work well. This is a typical scrap box project. Very little machining was required, just some good quality welding. The only part I purchased was the jack itself that was on sale over at Harbor Freight for less than \$10. So, dig through your scrap box and see what you can come up with.