February 2021
Newsletter

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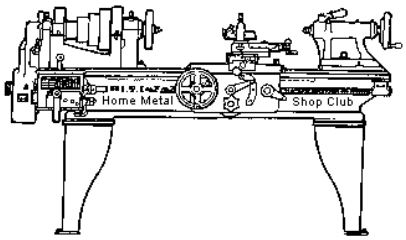


http://www.homemetalshopclub.org/

The Home Metal Shop Club has brought together metal workers from all over the Southeast Texas area since its founding by John Korman in 1996.

Our members' interests include Model Engineering, Casting, Blacksmithing, Gunsmithing, Sheet Metal Fabrication, Robotics, CNC, Welding, Metal Art, and others. Members enjoy getting together and talking about their craft and shops. Shops range from full machine shops to those limited to a bench vise and hacksaw.

If you like to make things, run metal working machines, or just talk about tools, this is your place. Meetings generally consist of ***general announcements***, an ***extended presentation*** with Q&A, a ***safety moment***, ***show and tell*** where attendees share their work and experiences, and ***problems and solutions*** where attendees can get answers to their questions or describe how they approached a problem. The meeting ends with ***free discussion*** and a ***novice group*** activity, where metal working techniques are demonstrated on a small lathe, grinders, and other metal shop equipment.

President	Vice President	Secretary	Treasurer	Librarian
Brian Alley	*Ray Thompson*	*Joe Sybille*	*Gary Toll*	*Ray Thompson*
Webmaster/Editor	Photographer	CNC SIG	Casting SIG	Novice SIG
Dick Kostelnicek	*Jan Rowland*	*Martin Kennedy*	*Tom Moore*	*John Cooper*

This newsletter is available as an electronic subscription from the front page of our website. We currently have over 1027 subscribers located all over the world.

About the Upcoming 13 March 2021 Meeting

The next general meeting will be held on 13 March 2021 at 1:00 P. M. on-line via Zoom. A week before the meeting invitees will receive from the webmaster the meeting ID and passcode to join the on-line meeting. Visit our website for up-to-the-minute details, date, location maps, and presentation topic for the next meeting.

General Announcements

Video of the November meeting can be viewed up to 30 days after the meeting.

The HMSC has a large library of metal shop related books and videos available for members to check out at each meeting. These books can be quite costly and are not usually available at local public libraries. Access to the library is one of the many benefits of club membership. The club has funds to purchase new books for the library. If you have suggestions, contact the Librarian *Ray Thompson*.

We need more articles for the monthly newsletter! If you would like to write an article, or would like to discuss writing an article, please contact the Webmaster Dick Kostelnicek. Think about your last project. Was it a success, with perhaps a few 'uh ohs' along the way? If so, others would like to read about it. And, as a reward for providing an article, you'll receive a free year's membership the next renewal cycle!

Ideas for programs at our monthly meeting are always welcomed. If you have an idea for a meeting topic, or if you know someone that could make a presentation, please contact Vice-President Ray Thompson.

Members are requested to submit to the club secretary the name, address, telephone number, and website address, if any, of any metal or other material stock supplier with whom the member has had any favorable dealings. A listing of the suppliers will appear on the homepage of the club website. Suppliers will be added from time to time as appropriate.

The club is looking for a member to serve as webmaster. After over ten years of service, our current webmaster would like to pass the webmaster torch to a successor.

Recap of the 13 February 2021 General Meeting

By *Joe Sybille*

Twelve members attended the 1:00 P.M. virtual meeting on Zoom. There were two visitors in attendance, Molen Scheffen and PinkCNC. There are twenty members in good standing with the club.

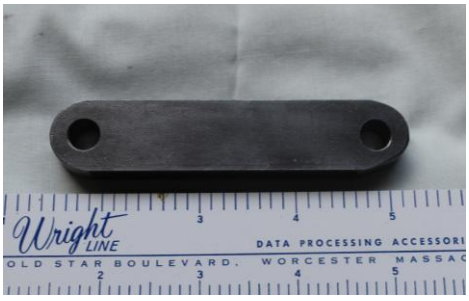
President emeritus, Vance Burns, led the meeting (right photo).

Presentation

Club member Dick Kostelnicek gave a preview of a future presentation on cutting metric gears with imperial dimensioned cutters. See the January HomeMetalShopClub newsletter From the looks of things, the gears meshed smoothly. See photo at right.

Show and Tell

John Cooper showed an unfinished version of a brush grabber tool he is making to his specifications. He had to purchase a few tools to work on the project. Shown below are photos of the unfinished brush grabber, his attempt to mill round corners on a piece of flat bar, an end mill to make better rounded corners on flatbar, and two sets of parallels, one fixed and one adjustable.



Molen Schaffen showed a picture of a windmill that keeps him busy with mechanical repairs. See photo at right.

Problems and Solutions

A member requested suggestions on how best to repair a broken dog on a cast iron hand wheel. The hand wheel is used to adjust the X-axis on the table of a mill. Several suggestions were offered.

Articles

Arbor for Gear Form Cutter

By *Dick Kostelnicek*


Fig. 1

I'm using metric form cutters (Fig. 1) to make spur gears. They're inexpensive imports that require a 22 mm arbor. All I have on hand are ¾ and 1 inch milling arbors. A R8-to-M22 arbor costs about $35 and requires a great deal of lead time via international post. So, I made my own. I use R8 style end mill holders (Fig. 2) because they provide extended clearance from the mill's spindle nose. So, I made a form cutter arbor to fit a 1 inch R8 holder.


Fig. 2


Fig. 3

The Left photo shows the arbor with a M1.25 form cutter mounted. The Weldon flat nearest from the cutter end of the arbor is repeated on the opposite side of the shank. This allows an adjustable spanner wrench to grip the shank without marring it as the arbor nut is adjusted. For different diameter shanks, Weldon flats require a specific width and depth along with 45 degree flanks (Fig 7). I used a 45 degree chamfering mill to cut the flanks (Fig. 4). The R8 holder's set screws have a matching 45 degree chamfer that engages the flat's shoulders to prevent the arbor form slipping or pulling out of the holder.

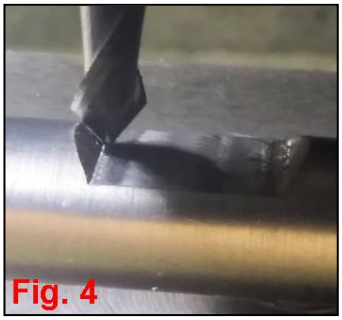
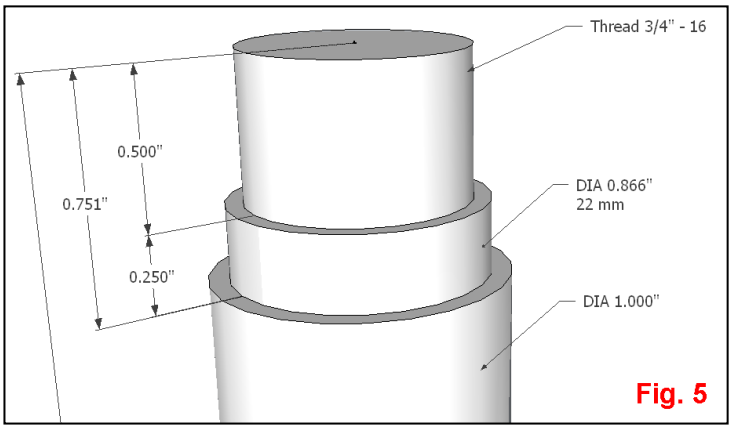


Fig. 4

The cutter end of the arbor (Fig. 5) has a 22 mm shoulder that holds the form cutter on center. It must have absolutely no run-out when placed in the R8 holder. Otherwise, the cutter will only cut with a few teeth for each revolution. I turned the shoulder 0.010 oversize and placed both the arbor and R8 holder in my mill's quill. While the arbor slowly revolved, I used an upside down Dremel die grinder (Fig. 6)

to remove the shoulders run-out that came to about 0.004 inches. Then, I centered the arbor in a 4-jaw lathe chuck by indicating precisely on the ground shoulder and turned it to size. Placing the arbor back into the mill's holder, I measured a 0.0002 inch shoulder run-out on my mill.



The arbor's mounting nut, shown in Fig. 7, is made from a common ¾"-16 nut. I bored out ¼ inch of the nut's threads to create a 22 mm (0.867 inch) diameter clearance pocket so that it would slip over the 22 mm shoulder. This allows securing form cutters of various thicknesses.

Form cutters can be keyed to the arbor, but I don't do it because I prefer slippage if they encounter trouble and attempt to stall.