



The Flightline

EAA Chapter 958 San Marcos, TX
Where every day is a good flying day!
March 2015 Issue



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March Chapter Meeting
at Redbird Skyport

The March meeting will begin with a pancake breakfast at 9:00 am followed by the regular meeting at 10:00 am Saturday 3/21/15.

Program: Erik Svendsen GM of McKee Avionics on "Steam Gauges vs. Glass Panels and their Economics".

February Meeting Update

The February meeting began with an excellent pancake breakfast in the galley at Redbird. Many thanks to Guy Bowen and Phillip Steel for their culinary efforts.

John Koenreich GM of Redbird Skyport briefly addressed the meeting and discussed the plans for a "Fly-in" at Redbird at the end of May. He invited the chapter to participate in several possible capacities. Of interest was the possibility of a "Young Eagles" program, and possibly handling concessions and a swap meet. The members in attendance voted unanimously to assist Redbird in the fly-in activities. More info as plans are developed.

A reminder that 2015 dues may be paid at the meeting or sent to Phillip Steel, 5130 Guinevere, San Antonio, TX 78218. DO NOT send dues to the address printed on the existing dues/application forms.

Larry New gave a presentation on using the Decal Pro system for producing a professional grade lettering and graphics for the instrument panel. (see eds. notes)

Stan Timmerman brought in some nifty samples of his hand made aluminum ribs that will go on his Bearhawk Patrol.

Will Hartsell has agreed to serve as chapter secretary. Many thanks to Will for his support.

From the Editor

Well we're off and running on a new chapter year and things are starting to happen. We've been approached to work with Redbird Skyport on their first Fly-in, possibly man the concessions, and swap meet as well as have a Young Eagles program. The upside is we have the potential of increasing the Chapters' exposure to the community as well as adding a few coins to the chapter coffers for future activities. We hope all members will participate in some way, as these types of events can be a tremendous amount of fun (even with the work) for all involved.

We're working to bring in meaningful programs for the members. This month we're fortunate to have Erik Svendsen General Manager at McKee Avionics doing a presentation. For the following months we have the owner of Specialized Aero and next an instructor with Sportair Workshops is tentative to address the chapter. Keep in mind we would also like our members to share their building experiences with the group too. Everybody has some words of wisdom either from their Oh oh! or their Oh yeah! moments. We don't always need the pro's to shed words of wisdom on our building experiences

Speaking of which Larry New gave an excellent presentation on the use of the Decal Pro System of making professional looking and tough graphics that can be used on your aircraft panels. He shared some of the issues facing the first time user in getting through the process. But when its done, you have a great looking graphic.

And last, we're always looking for project updates, techniques, tips etc. from our members for the newsletter. See Stan Timmermens blacksmithing ideas beginning on the next page.



Larry discusses some of the specific steps necessary to produce a professional looking decal.



The final product is a good looking and tough graphic that will stand up to abuse.

The Aviator Blacksmith

By Stan Timmerman

Many years ago I started blacksmithing. The hobby involves playing with fire and hitting things with hammers. As with aviation, you meet a lot of unusual people. While at one of the local events, I listened to some old timers speculate about whether they could forge an airplane engine. At the time, I did not know that modern airplane engines are made of aluminum - not iron. I do not know if those guys could have done it, but that is not the point. To be a blacksmith requires an open mind as to what is possible. I learned a lot about working iron from that hobby. At first glance, it is not applicable to aviation. But, I use that experience to make my own tools. This month I will show my pneumatic hammer revision 2.

I happened across a pneumatic chisel at Northern Tool. I think it was around \$13. I knew that it would be a high grade of steel and would be hardened.



The first step is to anneal the chisel. This is done with a rosebud torch. I could have used a forge, but I wanted the end that fits in the rivet gun to maintain its hardness. By heating from the business end of the chisel, I will soften just the part that I want softened. The picture may not be in focus because the designer of the camera focusing system did not anticipate the camera user would be holding a torch while trying to photograph glowing metal with the other hand.

While still orange hot, I bury the chisel in my bucket of vermiculite. It will take a long time to cool.



The next day, I came back and drilled/tapped holes in the face of the chisel. Even with annealing, it is important to use a nice quality bit, either cobalt or titanium. The center hole is threaded (metric) to fit the Harbor Freight hammer that sells for \$7. It comes with multiple plastic faces with a metric thread stud.



I then drilled and threaded smaller holes that will be used to keep the plastic hammer head from unscrewing while in use.



This is the finished plastic-faced hammer that I can use for flow forming aluminum. As an aside, there are rivet guns and there are pneumatic hammers. A pneumatic hammer cannot be used for riveting, but they work just fine for flow forming.

Here is a nice website from a fellow Bearhawk Patrol builder.

[FLOW FORMING BEARHAWK RIBS](#)

[Flow Forming Part 1 - Metalworking Tips from TM Tech](#)

As long as I am reminiscing about my blacksmith days, I thought I would show my flange straightener. Everyone that works with aluminum ribs makes one at some point. I made mine out of a hammer handle. I have several lifetimes worth of hammer handles; I am trying to use them up on projects. From a blacksmith's point of view, everything is a hammer, a handle, or something that needs to be hit with a hammer. The difference between me and a good blacksmith is knowing where to hit and why.



Under the theory that no one will have read this far, I will show one other project. It goes in the category of something I was going to bury in the back yard. Since I live in Hill Country, I cannot dig more than an inch without hitting limestone. So, I will dispose of the evidence in this article.

In the previous section I finished with “knowing where to hit and why”. In fabricating aluminum ribs, that becomes “knowing where to bend and why”. Anyone, that works with aluminum will understand the frustration of trying to make a rib sit flat. Knowing where to put the tiny little bend that will straighten it out is the secret. By the time you’re done you will know all of the tricks and it is not an issue.

I did not want to wait to the last rib to perfect my rib flanging technique. So, I cheated. I made a device that is a rib flute calculator. It takes a ridiculous amount of time to build. It does do what it supposed to do. It eliminates thinking from the bending process. I like not having to think too much – I envy teenagers.

The process of bending a rib starts with a flute. The amount that needs to be fluted changes as the rib is bent towards 90 degrees. You cannot get to 90 degrees unless the aluminum material is taken up by the flute.



Once I get the rib somewhat bent down, I use another form block that has gouges where the flute will go.

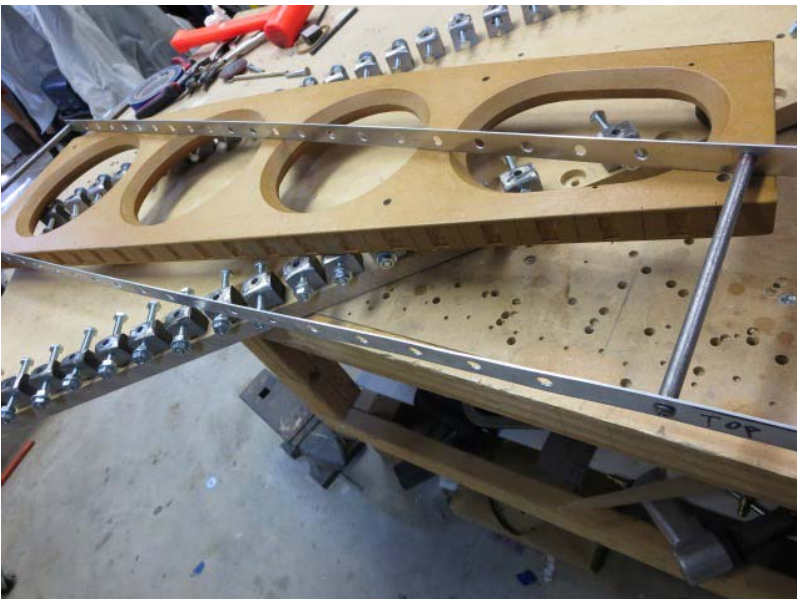


I then put the rib on the gouged out form and into the tool I have been hiding. It is an iron bar $\frac{1}{2}$ " by 1" bent roughly into the shape of the airfoil. The $\frac{1}{16}$ aluminum band I got from Home Depot. The screws are advanced to hold the band against the flats of the rib that will someday receive a rivet. The holes in the band are over the place where I need to finish the flute to the right size.



I do not really need to use the press here, but it is convenient for holding things down. The method I used was to take that little stick and poke it through the holes in the band. By tapping with a hammer, the flute will be formed to the exact amount needed. The strap prevents material from being taken from other flutes while holding the future rivet sites flat.

If someone does not mind thinking during the bending of flutes freehand, all of the above is unnecessary. This method allows me to avoid thinking during the monotony of bending ribs. In essence the tool is a mechanical calculator that takes up the exact amount of material at each location.



I made a variant for the center part of the airfoil. I liked this version better because I could modify it for another airfoil in the future. The first design is patrol specific.



I do not use a press to hold down the rib with this jig. I just tap with a rubber mallet. I then tap the flute with a stick and another hammer. To save time I used an oak dowel instead of turning a hammer handle down to size in a lathe.

As I have already said , “everything is a hammer or something to hit with a hammer”.

p.s.
I wanted to say, “I just hit with a rubber mallet”. However, when talking to aviation types you say “tap” instead of “hit”.



Safety Corner

Aviation Safety Programs and Webinars

EAA Sponsored webinars (free)

3/18/15 *Mastering Radio Communications*
7:00 pm with Prof. Shuch
 Wings Credit

3/25/15 Vertical Power-The benefits of
 Electronic Circuit Breakers
7:00 pm with Chad Jenson
 FAA AMT Credit

FAAsafety Team (FAAsafety.org)

3/20/15 10 ways Your Ipad Can Cause
 an Accident or FAA Violation
1800 hrs with Gary Reeves

