

- February 2016 -



*In this month's issue of The Leading Edge, we have a number of helpful tools and hints for aircraft builders from the members of KWRAA. Above is a homemade brake built by Clarence Martens. (Details on Page 2)*

## President's Message

Let's hope Wiarton Willie is wrong! (...again)

As pilots we tend to consider the weather conditions more than the average Joe on the street, but we also tend to trust our weather forecasting systems in North America more than the average Joe too. Is it because we have so many forecasts and reports at our disposal as pilots that we almost know without looking outside what we will find based on the Metars, Airmets/Sigmets, Pireps and other aviation tools at our disposal.

It can't be the reliability of the long-range local weather forecasts in the media, because they seem to change daily as the meteorologists attempt to predict which highs and lows will move in which direction and impact us here.

I don't know if anyone actually believes our local groundhog can reliably prognosticate as we are lead to believe each February 2<sup>nd</sup>.

Statistically, the rodent has a 50% chance of being right but I believe history has shown the opposite of the prediction is more likely.

Maybe Willie has one thing right though... Maybe the best way to really know is to go outside and experience the weather!

How many times have you listened to the predictions of how bad it was going to be tomorrow only to find out you could have flown until mid-afternoon before the front moved in to shut down the flying. I don't remember how many times last year that I made other plans and decided not to fly because "they" said it was going to be raining tomorrow. Several times it turned out that it only rained for an hour or so and was nice the rest of the day.

I think in 2016, I will read the Metars, etc., and listen to weather reports as a guide; then go out and experience the weather before committing. Either way, 2016 is going to be a great year for KWRAA!

- Dan

# The Leading Edge

## Homemade Metal Bending Brake

By - Clarence Martens

I needed a tool to bend 40" of .025" 6061T6. In the past when appearances didn't matter, in a pinch, a couple of 2x4s and a rubber mallet had worked on short pieces. I wasn't about to try it here. This was for the centre console in my Pegazair, which happens to double as a cover for the torque tubes in the baggage area... and sometimes also a "butt rest". Getting into a Peg can be very challenging for a big person with the lower wing struts in the way. This console is often the main support for safely getting in to the seats.

You know home builders ... resourceful and as frugal as they come. So, I looked through my ever growing inventory of (salvaged/rescued from the recycling bin) metal and hardware and came up with this. (see cover photo)

I don't have a drill press or lathe, so everything was done with hand/power tools and a TIG welder. The clamping levers were left over from an aluminum 'Safety Tripod', which I was given many years ago and have since recycled. The inside thread was 5/8" NC and I just happened to have some 5/8" threaded rod lying around. The outside diameter of the levers was 1.5" which gives a large flat surface to push on the clamping bar. I don't have much hot rolled heavy steel lying around, so whenever I need a substantial piece, I go to Production Metal Steel Sales in Cambridge. <http://www.goldentrianglesteel.com/>.

I wanted to be able to form a channel under 3", so I chose a 48" length of 2" x 2" HR 1/4" wall angle. This would let me form a channel as narrow as 2.82" if needed. I also wanted a solid base plate, but hadn't decided what to use. Then I spotted the perfect base... a 4 ft. long 3"x 5" x 3/8" wall angle, already cut and leaning against the band saw. For the lower bending plate I chose 4 ft. of 2 1/2 3/8" wall HRS angle. Over the years, I had scavenged many short lengths of formed 304 SS hinge with 3mm pins. After carefully placing and plug welding them every 2", the bottom plate and bending bar were one piece. After searching the images on the internet and having tried a

Chinese 30" apron brake, I didn't want to have to un-clamp and re-clamp the work every time I wanted to form a simple angle. Luckily, I had two exhaust springs from a long retired Honda Civic lying around that could do the lifting of the clamping bar for me! Perfect!

One challenge was that the I.D. of the springs was smaller than the 5/8" threaded rod and drilling the base for 5/8" was a little more than I could do in my garage. So, I welded a 1/2" bolt, minus the head and zinc plating of course, to it. This 1/2" bolt would be the "stud" that the whole thing mounts to the base. Measuring of this part was the most complicated and time consuming part of building the brake.



The height of lift I was able to get was 3/16", which far exceeds the brake's capacity (unless you're talking cardboard). So far, I've been able to get very straight bends of 40" with .025" 6061-T6 and .025 mild steel sheet over 30".



Mission accomplished for about \$45 in parts. Here is a shot of the finished centre console in the Pegazair.

# The Leading Edge

## Clecoe Cleanup!

If you have ever built a set of aircraft floats, you know that the cleanup process can be just as challenging as the construction of the floats.

Whether you use 3M 5200 adhesive sealant, RTV, or some other adhesive sealant, they all have one common property that makes them work well. As my late father would say, "It sticks like snot to a blanket!"

Clecoes often end up covered in the stuff and cleaning them up afterward seems like an impossible task. While the sealant is still wet, isopropyl alcohol will work in most cases, but seldom are you in a position to clean them at that point. Generally, you are so busy installing rivets and removing clecoes, that cleanup takes a back seat until the assembly job is done. By then it looks like a tube of bathtub caulking exploded in your clecoe container!



After much experimentation using solvents, wire brushes and cleaning agents, I found a simple, non-destructive environmentally friendly method to clean them up.

While building my Highlander, I had found that a crepe block worked very well for removing excess Eko-bond while I was gluing the fabric. Eko-bond is a latex-based glue, so it is very stringy when pulled away from a surface to which it is adhered. The crepe block is like a giant rubber eraser that tugs at the glue bonds along the adhesion line. By rubbing the Eko-bond, it removed the excess without touching the material between tapes and fabric. Lee Valley Tools has crepe blocks for about \$10.

I had a few small used cut-offs from the crepe block that I could try on the 3M adhesive and found that although it tugged away in a similar fashion as the Eko-bond, the small contours of the clecoes were extremely difficult to clean by rubbing them. What I needed was a method by which I could get at the contours of the small end of the clecoes. It turned out the solution was quite simple.

By drilling a one inch deep 1/8 inch diameter hole in the crepe block, I was able to use the clecoe pliers to insert the clecoe into the block.



## The Leading Edge

By simply rotating the clecoe in the block, or the block around the clecoe, it only took about 3 rotations to remove the dried sealant. Any that remained, usually came off by opening and closing the clecoe inside the crepe block hole. This operation was done in my hands, but I had to set things down to photograph it.



Every so often, I found it handy to re-drill the hole to remove the dried adhesive that was left behind to clog up the hole in the crepe block.

To clean the shaft of the clecoe, I drilled a larger hole to fit the entire clecoe into ... right up to the pliers clamping ring. Again, by rotating the clecoe, it removed the sealant and even shone the copper surface up a bit.



Occasionally, I found a clecoe that required a little wire brushing to shine them up a bit, but the wire brush did little to remove the sealant as I had discovered earlier.



I found that a few of the older clecoes had some epoxy on them from a prior project and the crepe block did not work to clean the epoxy off. However, if you are faced with cleaning up a bunch of clecoes you used during a float sealing operation, try this simple trick to get them looking almost new again!



Clecoes after my handy clean-up trick!

- Dan

## Are You an Ace or a Joker...?

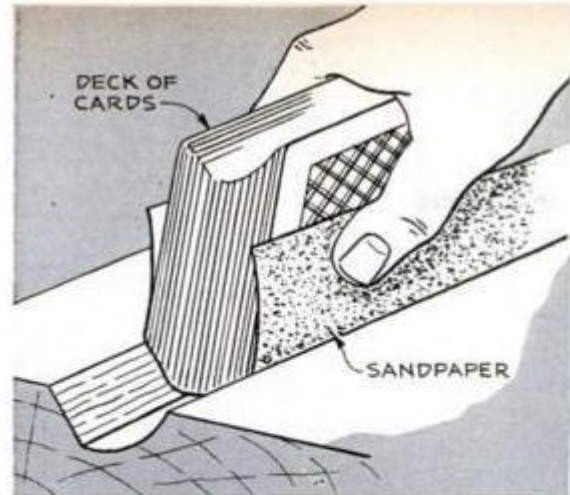
Here's another great tip I received from one of our members for sanding contoured surfaces.

It appears to have originally appeared in an issue of Popular Science in the 1950's. Thanks for letting us know about this simple but effective idea.

I tried this one and it works best on concave surfaces, but also works well on convex surfaces if you can squeeze the deck tightly as you work the sandpaper.

This trick works well on metal, wood or composite. Just match the grit type and size to the material you are sanding and you find things will go smooth...ly.

Now that's what I call a great card trick!



### Card Deck Is Sanding Block

TO SAND along grooves or shaped moldings, fold the paper around an old deck of cards. The deck will conform to the contours of the wood, assuring a more even contact than you'd get with your fingertips.—Daniel Bousha, Jackson, Mich.

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## The Straight Goods on Pulled Rivets

Here's a very simple fix to get to those hard to reach pop rivets that cause them to pull at a slight angle and not seat correctly. I had been wondering how to extend the reach of the rivet squeezer, when it came to me that all I needed was a temporary extension about 1/3" long in order to make the squeeze. I placed 4 rivet washers on the shaft of the pop rivet before inserting it into the riveter and sure enough, I was able to reach every rivet well enough to get a nice clean pull. When the rivet pops, the washers just fall off onto the bench and you're ready for the next one. Check it out...



Use rivet washers to extend the reach of the rivet squeezer. It works well up to about 1/3" after which the tool cannot get a good grip on the rivet shaft.

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## Please Help!!!

We are looking for ideas, hints, tips, tools, and other information for future issues of the Leading Edge newsletter. Please send your ideas, building tips or articles to me for inclusion in the newsletter. Other builders are interested in your ideas and tips that will save time and money when building their projects.

For anyone not comfortable with writing, send me your idea or tip via e-mail or phone and I will put the article together for you. Pictures help, but the important thing is that you share your ideas with the rest of the members!

Thank you Clarence for the great story about building your metal brake! ☺

## The Flaw of Averages

Ever wonder why they don't just build things to fit the average pilot? The other day I came across this great article on cockpit design in the military. It explains things pretty well.

<http://www.thestar.com/news/insight/2016/01/16/when-us-air-force-discovered-the-flaw-of-averages.html>

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## February is our annual recurrent training with Fred Grootarz.

Thanks Fred for keeping us current with TC regulations!

Check the website later this month for details about the March meeting.

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## Upcoming Events in 2016: (Highlighted lines are KWRAA Events\*)

March 14	-	March Meeting at 7:30 in the Cadet building at CYKF
April 11	-	April Meeting at 7:30 in the Cadet building at CYKF
May 9	-	May Meeting at 7:30 in the Cadet building at CYKF
June (TBA)	-	KWRAA Fly-In at Cam Wood's in West Montrose (Tentative)
July (TBA)	-	KWRAA Fly-In at Mike Shupe's (Tentative)
July 25-31	-	Air Venture Oshkosh in Wisconsin
August (TBA)	-	KWRAA Fly-In at CPR3 in Teviotdale/Palmerston (Tentative)
August 19-21	-	UPAC Convention – Lubitz Field, Plattsville ON
Sept 3-5	-	Canadian International Air Show – CNE Grounds
September 3 (TBA)	-	KWRAA Fly-In at CMZ2 – Metz/MacPat Field in Arthur (Tentative)
September 12	-	September Meeting at 7:30 in the Cadet building at CYKF
October 17	-	October Meeting at 7:30 in the Cadet building at CYKF
November 14	-	November Meeting at 7:30 in the Cadet building at CYKF
November 25 (TBA)	-	KWRAA Christmas Party in lieu of a December meeting

\* KWRAA events are fly-in and/or drive-in (Please advise the host in advance if you plan to attend whenever possible.)

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**Reminder:** If you haven't paid your 2016 KW-RAA Chapter dues, pay Mike at the March meeting!

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**Check out the KWRAA website regularly for the latest event details, chapter information and classified ads. [www.KWRAA.net](http://www.KWRAA.net)**