The NEMES Gazette

Vol 4 No 37
May, 1999

The Newsletter of the New England Model Engineering Society,
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Our Next Meeting is at 7:00 PM May 6, 1999 at the Museum, 154 Moody Street, Waltham Ma.

Annual dues is $20.00 - Please make checks payable to"NEMES" and send to the NEMES Treasurer: Kay R. Fisher 80 Fryeville Road Orange, MA 01364

This Months Contents

From the Editor's Desk:

This issue of the Gazette marks a couple of milestones. First, it starts the fourth year of publication - it hardly seems possible that I've put out three complete years worth already. Second, it begins a new distribution method. Last issue I asked for volunteers to help with the distribution, and three people stepped forward to say that they'd be willing to help. Max ben-Aaron, Norm Jones, and Bob Neidorff all volunteered. Bob was first in line, and the logistics are simplest with him. So, Bob will be handling the actual printing and mailing of the issues starting with this issue. I'll do the issue the same as always, then instead of printing out an original to take to the printers for the copies I'll email the issue to Bob. He'll then print out an original, get the copies made, and put them in the mail. Since there are some extra steps in getting the Gazette out now, the deadline will now be about 2 weeks prior to the meeting day, where before was only a bit over a week.

Thanks to Bob for taking on the job of distributing the Gazette, and thanks to Max and Norm for volunteering to help. I'll probably be calling on them to handle the distribution for those months when Bob is out of town and can't do it himself.

See you next Thursday -- scl.

President's Corner
by Ron Ginger

Next meeting, Thursday May 6

Our meeting topic will be lapping and fine fitting. We will have two speakers, and hopefully several related 'show and tell' items for this meeting. Roland Gaucher and Larry Twaits have both done a lot of lapping and very fine fititng work. They will show some sample laps and the parts made with them. Larry has done a lot of scraping and will show some of the tools and techniques he has delveloped. If anyone else has some examples of work, or even some examples of problems, bring them in.

Estate Sale

I understand the estate sale was quite a day. I spoke to Alison and she said it was as near a frenzy as she ever saw. It sounds like, with one notable exception, everyone was honest and fair in their offers. I understand someone made her a very low offer on the Emco compact 5 lathe/mill, and in the confusion of the day she accepted it. I was disappointed to find that someone would take advantage of such a situtation.

There is also a fair library of ME books- several books of projects, quite a few basic technique books, and many good reference works. I have the books, and will have them out for sale at thr May meeting. Most will be $5 to $20 each. Bring along a few extra dollars and get some good books.

There are still many magazines to sell- a full set of Strictly IC, HSM, PROJECTS in METAL, and about 25 years of ME. Alison is planning to offer these via the ebay WEB auction, but will take offers directly.

Shows.

Most of you must have noticed that I like ME shows :-) Ive just returned from the Harrogate show in England, and after a day of rest I'm ready to leave for NAMES. I'll have some photos and a bit of a talk on the two shows for the next meeting.

--Ron

Calendar of Events

NHOPTS Show
Dunstable MA Rt 113
Jay Wilkie 207-748-1092

May 6, 1999 Thur 7PM
NEMES Monthly club meeting
Waltham, Ma.
Charles River Museum of Industry 617-893-5410

May 22-23 Sat & Sun
Cranberry Flywheelers Antique Machinery Show
Edaville RR So. Carver MA off Rt 58 off Rt 495
Dave Robie 781-335-5322

May 22, Sat 9 AM 4 PM
Chester on Track
Large train event for whole family
413-667-8755

May 29-30 Sat & Sun
Steam/Gas Engine Show
Bernardston MA Rt 10 between 93 & 142
Wes Ball 413-648-9450

May 29-30 Sat & Sun 10-5
Owls Head Flea Market

May 31, Memorial Day
American Precision Museum opens for 1999
Carriage Wheels to Cadillacs
The Journey of Henry Leland
Winsor Vt. 10-4 S,S,Hol 9-5 weekdays
Till Nov 1st 802-674-5781

For a listing, please send name and brief description of event, time and place and a person to call for further information to.
Bill Brackett at wbracket@ultranet.com or 508-393-6290

Mar/April Treasurers Report

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Previous balance ---------------- $2451.11
Interest ----------------------- 1.00
Steve Lovely News Letter Expense -125.14
Steve Lovely News Letter Expense -114.33
Interest ----------------------- 1.03
New balance -------------------- $2213.67
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Respectfully
Kay R. Fisher
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The Meeting, April 1, 1999

We started out with a report from Mike Boucher, who has handled all of the paperwork involved in making NEMES a genuine Massachusetts Corporation. He checked to see what the story was with government forms for tax time. The good news is that we don't have to file any. We don't for two reasons. one, we incorporated less than 27 months ago, and two we had less than $5000 gross revenue for the year.

Many times in the past Ron has spoken too us about what to do when a model engineer passes away leaving a collection of good stuff to a group of heirs who know nothing about what it is and no desire to learn. At the meeting he informed us that it has passed from the abstract to reality. Charlie McDonald was a member of the USS Constitution Model Ship Guild, in which Ron is also active. Ron got a call from one of Charlie's daughters - they need to clear out Charlies house in Kittery Maine so it can be sold to settle his estate. Ron and Larry went to Maine to see what was there. They found a lot of nice stuff - a huge collection that the family knows and cares nothing about. Saturday and Sunday, April 17 and 18, the two daughters will be there to conduct a sale. (That's almost a week away as I write this - hopefully I'll have a report in time to go somewhere else in this issue.)

The subject of helping families of deceased model engineers deal with the tools and models they suddenly find themselves with generated a lot of discussion. One of the possibilities that came up was that the club could put together a list of recommended auctioneers to recommend in the future.

After the meeting someone approached me and said that one thing people should consider is putting together some sort of a list of what you have along with values so that when you're gone your survivors have some idea of what you've left them.

John Alden was the main speaker for the night. The talk evolved out of a conversation at one of the tables during a food stop on the bus ride to the Cabin Fever Expo in Pennsylvania. Ron was at the same table as John and it came up that John had spent his career breaking into safes and vaults. Ever alert for a good meeting speaker Ron lined him up right away.

John trained as a watchmaker in 1939 and 1940 in Watertown Mass. From September to June he went 3 nights a week alternating with 2 nights a week. It was a big decision for him to go because it cost $75 for the course - which was 6 weeks pay. He got a job as an apprentice in Framingham, and after the war went into business for himself. He got robbed a few times and didn't enjoy it.

Then Mosler called to ask if he knew timelocks, and he said yes because he'd worked on them before.

Before timelocks a typical bank robbery would take place at night. The crooks would wait till 7 PM or so and go to the bank presidents house. Some of the crooks would stay with the family, holding it hostage, while the president and the rest of the crooks went to the bank and opened the vault. With a time lock it doesn't matter if you know the combination to the vault or not, it won't open till the timer has run down the delay set when the door was closed. Even when the delay has run down and the door can be opened most of them now have an 15 minute delay to open the door from when the combination is entered. The 15 minutes gives the police time to get there if the alarm is set off. Time locks have even been made that didn't even have a combination - when the time expired the door would unlock.

Amos Holbrook of Milford Massachusetts invented the first timelock in 1857. But it wasn't until 1875 that Sargeant Greenleaf produced the first workable timelock to be successfully produced. Sargeant provided the know how and Greenleaf the financial backing.

Today all the timelocks come from Switzerland and are made cheap.

Illinois made timelocks for Mossler, then went out of business. Then Waltham made them till they went out of business too. After that the Swiss made them for Mossler, but not anymore. Now the timelocks are all digital. The banks love them because they are cheap.

The biggest reason that a timelock will fail is that the bank has overwound them. Mossler sells service contracts on their vaults. If a door won't open because the timelock is stuck and they have a service contract on it it's Mossler's problem, but if it's because they overwound it then it's the banks problem.

He had one man who wound too much time into the time locks - he didn't want to have to wait that long to open the door again. So he took the timelocks out and locked the door. It was core drill time - can't open the door without the okay from the timelocks and they weren't there to give it so the door couldn't be opened from the outside.

In a vault you don't get into it by drilling a hole in the door, you drill a hole through the vault wall and open the door from the back. One time John was dealing with a 12 inch thick door that was stuck. They used a 16 inch diameter core drill to open a hole in the vault wall so a man could sqeeze in and work on the back of the door. It took three hours to drill the hole, and they hit a piece of steel plate the the diamond core drill wouldn't cut. They used a sawsall to cut the plate.

A vault door doesn't swing shut on hinges like most of the doors we see, it is hung from a crane and slides in straight. There was a bottom bolt that had broken the pin holding it so it wouldn't retract and let the door move. They got a long piece of rebar to get under the bolt and lift it so the door could be opened.

After the door is repaired and working, the hole in the vault wall needs to be repaired. The vault wall is made of reinforced concrete, so when you cut a hole in it you have removed both cement and steel. To patch the hole back up you first get a welder in to weld the missing steel back into place. Then you get a special concrete mix to fill the hole in around the replaced steel and when it's cured all that's left is too clean up the mess. And there's plenty of mess to clean up. Just picture a nice neat bank lobby after a water cooled diamond core drill has finished opening up the side of the vault wall and dribbled mud on the rug.

He finds that in a lot of cases when he's called to open a safe he doesn't have to break in, he just has to use his head. A CVS had just bought a new safe and had to open the old one. Nobody in the store knew how to open it. His partner on the job looked at it and said to him that it looked liked they'd be there a while drilling. John told him no way, he'd have it open in 2 minutes, and he did. The combination was on the wall. Another time he had a safe where they knew the first two numbers, but not the third. They knew 15 and 30. He dialed in 15, 30, 45 and had it open in nothing flat.

The old safes you could dial in a combination and here the dial. New ones you can't do that, you have to drill them. He pays 8 or 9 dollars each for carbide tipped drills. For some safes he's used as many as 30 or 40 to drill one hole. They are similar to the carbide masonry drill from the hardware store, but they are ground sharp. When using them it's important to change them as soon as they start to get dull. If you try to use them after they've started to dull then you'll be burnishing the bottom of the hole you're drilling not cutting away the metal. That'll work harden it and make you're job even tougher.

To drill as safe you have to go through several inches of hard material and then you need to hit a target that may only be .25 inches square. So you need a way to guide things. What he has is a setup that bolts into the holes in the face of the door that are used to retain the dial. With the right attachment on a slide hammer you can grip the dial and pull it right off. Then you have access to the bolts in the door and can attach you're drill ing equipment. He had two different sets that he showed us, both made by StrongArm Incorporated. The equipment mounts to the door and lets you put pressure on the drill to keep it cutting. His older set had a lever for pressure, the newer outfit had a screw feed. John says it's hard work drilling a door and he doesn't plan on doing too many more of them himself, he'll let somebody younger do it.

In the old days nobody would tell anyone else anything about what was inside a safe door, but today he's in an association and can call them up and get the info on where to drill just about any safe there is. After you drill the hole in the right place you've cut off some critical bit in the chain of things that keep

the door from opening, and you can open it. Then you have to repair it. If it's a modern safe where parts are available you plug up the hole, install the new parts, and it's ready to go. All sorts of things get used to plug up holes, from ball bearings to taps to carbide matrix that's driven into a slightly undersized hole so it's in there permanently.

Modern safes have glass around the lock. If you try to drill the door you'll break the glass and the relockers will kick in. So, you have to drill the side of the safe and use a bore scope to lookinto the hole in the back of the lock (where the key goes in when you change the combination) and manipulate the lock to determine the combination so you can open the door.

One time he and a partner were in downtown Boston near the police station trying to get a night depository open. They were on the outside of the building cutting a hole into the wall to get into the vault. Finally about 2 AM a Captain asked them what they were doing and they told him they were breaking into the vault for the Mossler Safe Company. He asked for ID and when he was satisfied they weren't burgling the bank asked how many policemen had asked what they were doing, and they told him noone else had said anything. John figures the Captain must not have been too happy with his troops that night.

One time he went to a Mossler party. He didn't have his keys with him because he planned on having a good time. So he borrowed his rides set of picks and started working on his door. A cop came by and asked what he was doing and he said he was opening the door. Then the cop saw his face and said "Oh, it's only you John." and kept going. He can get the typical door lock open faster with picks than with a key almost.

One time he had to drill through 7 inches to hit a 5/8" bolt through a stainless steel door. He drilled it in 2 1/2 hours. Half an hour to get to the 1/2 inch carbide matrix and 2 hours to go through it. He used 25 or 30 carbide tipped drills on it. When drilling the matrix it's important to remember to back the drill out before you shut down the motor because if the drill stops with pressure on it'll weld itself to the carbide matrix and you'll part of the drill tip in the hole and have to drill it out too.

A few years ago there was a big vault robber in Medford. It happened on a Holiday long weekend and when they opened the vault they found a foot of coins, jewelry, and junk on the floor, with all the boxes open. There was also a hole jackhammered through the vault ceiling. While the holiday parade was going by outside, the crooks were going through the entire vault. The haul was several million dollars. He was on the way to Charlestown and got a call to go to Medford where he ended up in the vault the day after the robbery.

There are good safes being made today. It's mostly jewelry stores that buy them. Today the largest manufacturer of safes in the world is Sentry. They are easy to get into though, they're made for fire resistance, not to keep money safe. You'll pay 10 to 20 thousand for a good safe today.

Along with the tools and timelocks he brought to show us he had a diepack. It was a manilla envelope stuffed with what looked like about a hundred ten dollar bills. They were all real, but the centers had been cut out so they were not negotiable (no serial numbers) to make room for the electronics, the explosive charge, and the die. John had disarmed it and it was quite an interesting conversation piece I thought.

Dave Piper has completed the drawings for his tool post and tool holders. He had eight sets at the meeting for anyone who wanted to make them. He still hasn't sent it out for case hardening, but he has it complete and has used it.

TIPS AND TECHNIQUES

Ed Kingsley

A GREATER OR LESSER DEGREE

The "degree" symbol (˚), nowhere to be found on your keyboard (mine anyway) is hiding there, just beneath your fingers. There are 2 degree symbols available in Win98 (I'm assuming Win95 is similar?) -- the greater, ALT + 167 (º), and the lesser, ALT + 248 (˚). Press and hold the "ALT" key, and type in either the numbers "167" or "248", without the quotation marks, or the "+" symbol. Sometimes it takes a moment or two to appear.

Useful for scientific notation, and invaluable for an every increasing host of smutty smilies.

Microsoft Trial = geek tragedy

THE HOLE THING

I've been deburring and countersinking a lot of drilled holes in aluminum lately, and I've discovered a couple of strategies that seem to help. When you have to remove the burr from a hole drilled perpendicular to a curved surface (i.e., a set screw on a shaft ..) try a ball shaped carbide or HSS burr. They are particularly handy on the inside surface of a round pocket, or other curved surface that is normally difficult to even get at with other tools, let alone do a decent job of cleaning up the hole.

No matter how gradually I let the drill slip through the bottom of the hole, I sometimes get a "crown" of metal protruding from the opening. Often this puckerbrush of slivers rolls over the edge of the hole making countersinking very difficult. When the countersink tries to enter the hole, it is forced sideways by the burr, producing an off-center chamfer and lots of chatter marks. Worse, sometimes it won't remove the burr completely without countersinking the hole much deeper than desired.

When this occurs, I use a counterBORE to clear out the worst of the underbrush first. Often, if I'm careful, I can eliminate all of it, without leaving a mark any larger than the countersink will remove. If you don't want to countersink a hole, but do need to deburr it, a counterbore carefully applied may do the job. The trick is knowing just when to stop. If your counterbore has a radius between the pilot and the flute, this will be a little easier.

Watch spring unwind .....

THEY'RE BAAAACK !

Poor ENCO. MSC buys them out (like California buying Mexico) and what happens. First they start shutting down their retail stores, one by one, and then the mother-store-in-Chicago is plowed under. But, like the Phoenix, ENCO has arisen from the soot with a new catalog, a new headquarters and a new "look". I, for one am impressed. Several years ago I placed an order of 10 items, at the retail store in NH, paid in advance, got five that they had in stock, and received the 10th item FOURTEEN MONTHS later! Last December, I ordered 4 items, from the catalog, and received all four of them --THE NEXT DAY! Not only that, but the operator was pleasant, helpful and knowledgeable, even offering me the price of a former sale item several months after it was no longer on sale. (OK, I did ask first, but she acquiesced with a smile :-).

If you get this news in time, ENCO is offering free UPS shipping on catalog orders, until April 30th.

42.7% of all statistics are made up on the spot.

GETTING THE BENDS

... to come out right the first time. Here's a tip I picked up from Michael Martin, who picked it off of the Modeleng-List. He has personally tried this, and say's it's "fantastic". I have not, and wish to be absolved of any liability - whatever your results may be. The following is slightly paraphrased from the original, for clarity.

TO BEND SMALL TUBING WITHOUT MUSHING IT,

Place the tubing in a "suitable container", that is: one which will accommodate the length of the tube and allow it to be covered with water. Allow the tube to fill with water. Take two small goops of Vaseline, one on each index finger, and while keeping the tubing submerged, stuff the goop into both ends of the tube in such a fashion as to entrap the water therein.

Remove the tube from the container and place immediately in the freezer, laying flat on a piece of wax paper. More goops may be added at this time to assure that the water will remain in the tube and that the tube is now stuck to the paper. Remove goop from extremities, and allow the water trapped in the tube to freeze.

Remove the tube from the freezer (gloves are recommended, or you'll get goop all over your hands again) and immediately place on bending form. Proceed to bend the tube around the form. Do what you can to remove the goops from the tube, and allow water to melt. Clean well to remove all traces of goop, and continue with project.

DIAL "M" FOR MICROMETER

(... a personal opinion)

I believe that I now have sufficient experience in measuring things to suggest, without equivocation:

"If the measurement is important, use a micrometer -- not a caliper"

I grant you all the advantages calipers offer; multiple measuring modes, speed, ease of reading, convenience and range. Mikes are awkward to hold, slow to adjust, difficult to read and easy to misread. They offer only one special advantage - accuracy!

Time and time again, I've taken a measurement with a caliper, very carefully, then done it again to be sure - and gotten a different reading. Best out of three? Sometimes I can get consistency, sometimes not. However, even when I do get the same reading each time, way more often than not - it's wrong, by several thousandths.

Calipers and micrometers, you might say, approach a measurement differently. Let's take the measuring of a diameter, something you might be doing in the lathe, a measurement that may be important to get right. Any caliper that I've used (many, many) will measure slightly differently at the tip, the middle of the jaws and at the beam. Sometimes it's because the jaws are warped, sometimes it's because the gibs are loose and sometimes it's a factor of the pressure you exert with your thumb. The same pressure causes greater strain at the tip than

at the beam. After the calipers have been “bumped” a few times, all 3 reasons will apply.

Let’s look at the way the two tools are placed on the workpiece. In the lathe, especially, the caliper is awkward to place in a position that it can be read. It’s important to keep the jaws perpendicular to the work, and this is difficult to do while you’re bent over trying to read the dial, vernier scale or readout. The digital caliper with a “hold” function helps here, but all the other disadvantages still apply. Any cocking of the tool, along the axis of the work will throw off the measurement, and it’s very hard not to do that.

The micrometer has a much better chance of sitting squarely on the work, at right angles, because of the width of the anvils. The scale is not affected by parallax as the dial on a caliper can be, and is easily read (as much as ever anyway). Pressure differences here can make a slight difference in the reading, but nowhere near the discrepancies you can achieve with calipers. If you have a ratchet or friction thimble, you can get very consistent results, time after time. Practice on a gage block or pin gage of known accuracy, and you’ll be inside a couple 10ths’s in no time.

On flat work, burrs at the edge of the piece will influence a caliper, but a mike can usually measure beyond the edge for a truer reading. As the length of the piece increases, using a mike becomes trickier, but its accuracy remains relatively constant. The narrow width of the caliper jaws becomes a greater problem as the length to be measured increases. Pressure on the jaws becomes less controllable, perpendicularity isn’t, and accuracy suffers.

I should have prefaced this harangue by confessing to being a former caliper-junky. I hated those other things and never used them. Despite a chronic failure at getting mating parts to mate, I remained stubbornly in denial until I was eventually compelled by circumstances to start using micrometers. The guy I was doing some work for insisted on getting parts that were the right size. After a few weeks of anguished mental arithmetic, I got a set of digital micrometers, and I’ve never looked back. I still try to read the scale before I look at the readout, but you just have to love those little odometers.

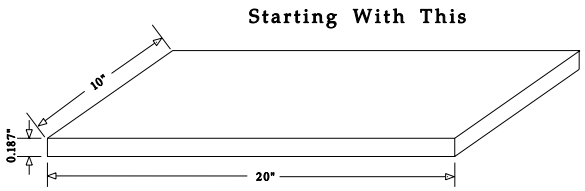
Anyway, here’s my none-to-soon-summation. Calipers - neat things. Great for approximating sizes to the nearest .005”. If you have to use them, calibrate them to a known reference BEFORE you measure something important. Micrometers can take more abuse than calipers, and even inexpensive micrometers and used mikes are usually quite accurate. Most of the caliper errors I’ve ever had were “over measuring” errors. This ensures that your part will be undersized. This is a condition that is usually difficult to correct, and is often technically referred to as ‘scrap’.

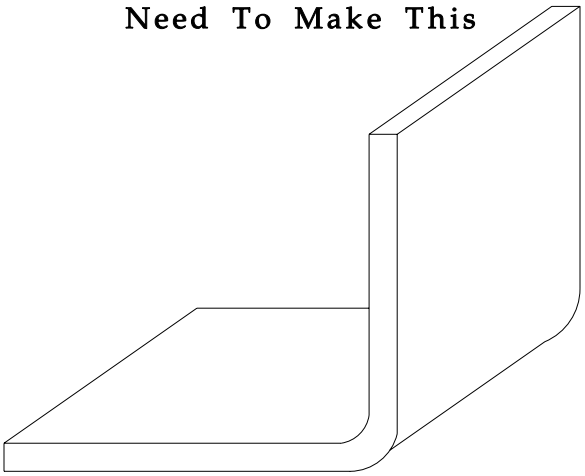
If it ain’t broke, fix it til’ it is ...

--Ed

Bend Steel With Your Bare Hands!
by Bob Neidorff

I needed to make a motor mounting bracket. The scrap yard had a nice piece of 3/16” steel, which seemed stiff enough. And the price was right! But how can I bend it?





I asked for advice on the metalworking newsgroup and was told that I’d need 8 to 10 tons of force to bend that plate. Gosh, that rules out hand bending...or does it?

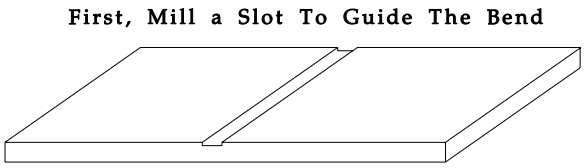
Someone else recommended cutting a slot into a tree stump, slipping the plate into the slot, and wailing away at it with a sledge hammer. I never got around to trying that. Well, it may be a good way to get rid of unwanted tree stumps, but it doesn’t sound like a good way to make a precision bend.

A friend offered to help me with his 20 ton press, but that would require welding a ram attachment and a backing channel to “bend into”. Well, if I had a welder, I wouldn’t be bending!

I thought about using pin gages, because they’re recommended for almost everything, but this

may be the one place where they don't help. (Ed: Got any thoughts?)

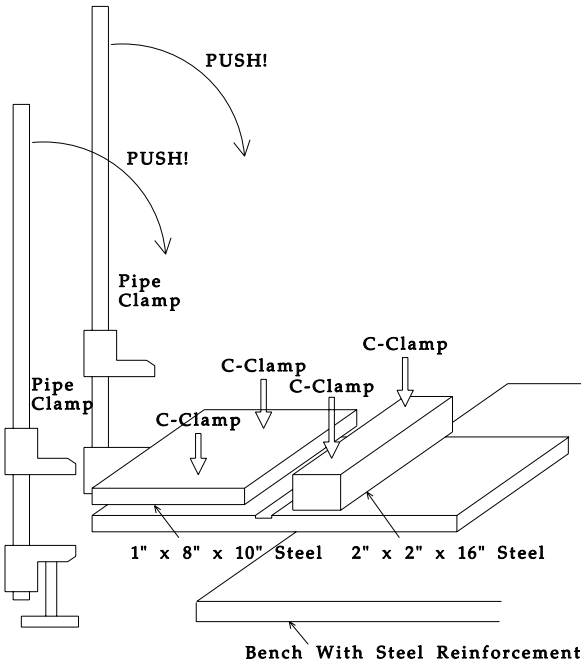
So here's what I did. First, I milled a 3/4" wide slot into the center of the plate, to act as the bend point. I only went 0.025" deep into the 0.187" plate, but that seemed enough to weaken it.



Next, I clamped the piece to my wooden work bench with welded steel legs. I used a steel bar 2"x2"x16" to brace the work to the bench, because it was handy. However, a 1" bar would have been enough. The key was to use c-clamps to clamp the top bar to the steel leg frame of the workbench. That made a very stiff structure. The wooden top just went along for the ride, so to speak.

Then I clamped a 1"x8"x10" steel plate over the work, near the bend line. I used two c-clamps for this, too. Now how do I put 10 tons of force onto the bend line? I tried pushing on that clamped piece, but it wouldn't budge.

In my woodworking shop, I use 3/4" pipe clamps made by Brink and Cotton. These aren't super-strong, but they've gotten me out of jams in the past. What if I used the 4 foot length of pipe as a lever?



I clamped two pipe clamps onto the edge of the work, and pushed pretty hard. AMAZING! It started to bend! Push some more, and it bent some more. After a while, it wouldn't go any more, because I was pushing at a funny angle and clamps were hitting other clamps, so I flipped the pipe clamps over. Now, instead of pushing forward and down, I was pulling back and pushing up. That gave me the extra swing space to complete the bend.

The results look very nice. There's a gentle curve to the bend all through the 3/4" weakened area, but the rest is as straight as it was before bending. And it's rigid. I'm going to brace it for good measure, but it doesn't seem like it will be necessary.

Perhaps this will give you some confidence and tips for your next bending task. Comments welcome!

Letters

Stephen,

I attended the NEMES meeting for the first time last month as a guest of Leo Klos. I plan on attending further meetings. I am restoring an old internal micrometer. I need an 8-40 tap and die to finish the project. Because this is an unusual tap I have not been able to locate one. Leo suggested e-mailing you and having you publish the fact that I would like to borrow one for a short period of time.

Thank You, Adam Bahret

adam.bahret@iis.varian.com Work (978)282-2103 Home(978)282-3125

How about a Contest?

Lately, there's been quite a few hi tech, formerly hi price spinoffs of military industrial complexity coming out into our world at super el cheapo prices. An example of one of these is the light amplifier type night binocular. Another is the diode laser, showing up as a light pointer used at lectures, chalk talks etc.

Recently obtained a couple of these pointers for fun. Having had experience with industrial lasers (used as a standard for underwater video measurement down to the .0001 range) figured that there's got to be 'quick and dirty' applications for us in the shop.

Lasers I have are 'pistol gunsight' size, 2 3/4 x 1/2"+ dia but on a keychain. The dot edges are pretty sharp (the part used for measurement), dot being visible in the normally lighted shop over 10 feet away. Divergence (expansion of dot): size at 12".056 20".030 and 30":.056. From then she gets bigger, as was designed as a pointer that can project a circle, an arrow etc using included changeable lenses up to about 30 feet. Individual lasers may be slightly different than this sample, but amazingly, this 'crossover

point' is adjustable as the inner lens screws in and out, when adjusted appears constant 'small enough' for wood-working, masonry layout etc used with a white target way out there.

This immediately suggests: Mount stability. External bigger battery power is also a must, due to the extreme short life high cost batteries inside. Therefore, replace the 3 batteries with a wire going to a switch and 'cheap battery' box, tape the push button switch down, and magnetic mount above mill table or lathe bed, and use as a sharp visual 'end of travel' indicator.

However, what else does it suggest? Here we got a whole big roomfull of guys all of us pretty darned sharp hands on types with minds not numbed by TV sets, interest in political monkeyshines, or boozing clubs, with individual creativity demonstrated at our shows etc superior to the average industrial think tank.

I propose a contest. A shop application of this goomer, only rules being that the app not take a long time to construct and be able to be used by most of us. It certainly can be something already used in industry such as a sewer pipe pitch level or short range transit but anything like that must also be subject to the first two rules. Contest will be a program at a future meeting to be announced here. The device does not have to be built, just sketched in a size for overhead projector and explained by entrant at a meeting. The judges will be non-entrants picked at random at the meeting, secret balloting. The app could even use two laser pointers, they are cheap. Prize, of course, will be one of those lasers.

I myself will enter the above 'magnet mount visual travel stop' idea, already built it as a light turning of the key-chain mounting ball made it fit my magnetic indicator mount solidly and it's useful immediately. The external battery hookup will be the sketch, with photocopied giveaways at the meeting. Entrants, likewise, should make giveaway copies of their sketches. Anyone wanting my 'handout' which also shows the external power conversion including a simple hi-lo power switch please send SASE to D. C. Robie PO Box 414, So Weymouth MA 02190.

So put on the thinking caps, guys. This whole thing looks like fun.

- Dave Robie, Weymouth MA

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