

## It's Reely Pretty Easy

Text and photos by Peter Dallman and Michael Hackney

In this third installment, Michael and I will address a topic most rod builders are hesitant to tackle — reel building. This task is not as daunting as you would think. This is a tale about how one man, John Betts, inspired two men to make their own equipment. These reels are his designs and the story is of his influence on our passion.

### Making It Reel - Peter's Story

My mentor, John Betts, told me the story of how he came to build his own reels. In the 1970s he enjoyed winter fly fishing in Colorado. The major problem was his reel would freeze up, literally. The lubricant or the components/bearings would seize from the cold. He wanted to conceive of an all season design.

“Ice in the guides can be remedied by removal, and reduced with redesigned guides. Ice in the reel is another matter. Once it was in place it was hard to get out!” -John Betts

John watched a show on the Discovery Channel many years back that showed Afghani gunsmiths in a village that could copy any gun, even automatics, in about two weeks. They used a hand-powered bellows for their coal-fired forge. Several shops on the street shared a single ancient electric drill press. They had no modern machine tools to speak of. Everything was fabricated using basic hand tools like a file and a hacksaw and blacksmithing tools. Their skill was such that they made exact copies of the parts that were interchangeable with the originals. John wondered “if they could build guns with such limited resources, why can't I make something as easy as a fly reel?” By coincidence, I had also watched this same program. So when I encountered John's challenge to reel building I was onboard with his agenda. We

make our reels using only simple hand tools such as files, a hacksaw, sandpaper, and a hand-drill with various drill bit sizes, that's it. You can use any modern tool you want, we just chose to walk a different path to prove something to ourselves. John chose brass as his material. He explained that it is very similar to wood to work with and more durable than aluminum, cheap, and easy to find. I got my supply from the local Ace hardware store for \$8. They carry a small supply of sheet and tube stock for hobbyists.



Figure 1: Peter Dallman's Reels

John went all out and even made the screws from brass rod using a file. That was a little too much for me but he wanted to prove a point to himself. As you can see from the photos (*i.e.* **Figure 1**), the brass is beautiful when polished, but to reduce the chance of a reflection chasing fish away, we let it dull naturally. Another advantage to brass is I have put my equipment and reels through some hard falls and seriously bent my reel. I took it back to the shop and disassembled it. Using a big C-clamp and some 1/2" metal plates, I was able to flatten the parts back to the original shape. I assembled the reel and it worked just fine. My aluminum reel may be

(Continued on page 34)

lighter but it could never take the abuse my Brassy can. I went through a store-bought aluminum reel with bearings in 1-½ seasons. I remember the reel literally falling apart in my hands from wear. We do not use ball bearings. I have nothing against them. I salvage bearing rings from spent computer disc drives and use them to build my version of the NorVise for fly tying, but that is another story. The plastic (Delrin™) drums turn on a lubricated aluminum shaft just fine. Without any tension, it will spin 12-14 times before it stops. We have added a clicker design as an option.

Let's start with the basic component, the plates. I will just outline the basic steps.

1. Use any reel you have for a size pattern. I made the drum face plates first.
2. I scribed the size onto the brass sheet outlining the shape.
3. I drilled a 3/8" hole in the center of two plates.
4. I cut out a square shape with the circle scribed in the middle.
5. I cut the corners off and then repeated the process. Cut the corner off a total of three times so there are 16 sides.
6. I used a file to round the edges to get a closer to a circular shape.
7. I put a 2" x 3/8" bolt with two nuts on either side of the plates. The nuts captivate the plates and the second nut is the lock.
8. I clamped my portable hand drill in place using my vise mounted on the workbench.
9. I chocked the bolt, nuts and plates into the drill.
10. I spun the two plates and used sandpaper with a block of wood to hold against the spinning plates to grind them to make a nearly perfect circle. I can use this same setup to polish the plates.
11. The drum is made of Delrin plastic rod with a hole drilled very carefully through the center.

There are some choices to make in material for

the posts. A brass rod is the most durable. Threading the ends can be a challenge. Tapping brass threads is more difficult than you might imagine. The cuttings, or tailings, tend to gum up the tap and you get a lot of seizing. Because the thread size is small, this results in breaking more than your share of brittle taps. There are several alternatives to brass posts.

- ◆ An easier solution is to purchase a small aluminum tube that has the center hole that you can tap the thread in easily. I have either painted the aluminum, or put a brass sleeve over it. I don't mind the aluminum look myself.
- ◆ Another alternative is to use very dense wood. Living in southern California I run across some beautiful pieces of ironwood when walking the trails. We call it mountain mahogany. This wood can easily be cut to a long, square shape. I file the edges smooth. Place this stock into the end of your drill and spin it. Use a file and then sandpaper to turn it round and smooth. Cut it to length and drill and tap the ends.
- ◆ You can also use epoxy-stabilized wood, the type used for pen blanks. It is easy to cut and polish. It is very easy to tap, waterproof, and very durable.

I would like to inspire you to challenge yourself and experiment. I have continued to create my own designs far different from the original. I just passed my 54th birthday. Ten years ago I could turn out a rod and reel combo in 40 hours (raw stock to casting). It takes me about 60 hours now. Each winter starts with a new rod and reel design for the season.

Now the story gets a little more interesting. I got an email from a Michael Hackney who you know from the horse-hair line article in the last issue. I am by profession a technical writer. To write out a specific step-by-step set of directions isn't hard. But, I didn't do that. When I attempted to learn rod and reel building, John sent

*(Continued on page 35)*

me a series of letters, followed by some phone calls, and a couple of pictures. I figured it out on my own. It was a very 19th century approach, in the spirit of just simple hand tools. In that tradition, Michael learned the same way. It was frustrating for him, just as it was for me. The results are amazing. His having to make some leaps for himself has added to our knowledge base as you will read. I am going to let Michael pick up the story from here.

### Reel-y Inspired - Michael's Story

I had been tinkering around with reel making for several years. My initial inspiration was John Bett's book, "*Making Strip-built Fly Rods from Various Woods on a Lathe.*" I built a couple of rods from the first, self-published, version of the book. John mentions reel building several times in the book. After building a rod, I turned my attention to thinking about reel building again.

I began by searching the Web high and low, Googling until my fingers turned blue! There is

very little information on reel building available. I did find an article titled, "*Machine Your Fishing Reel*" in an old issue of *Mechanix Illustrated* (January, 1951) that described how to turn an aluminum reel on a lathe (*Editor's Note: There is a pdf available if you search the Internet with your favorite search engine*). Other than that, there were a few photos of homemade aluminum and wooden reels on several forums and Web sites. Like Peter, I also contacted John Betts and asked about his reels. He provided a little information, enough to whet my appetite and convince me it was not complete lunacy to build my own reel!

Armed with this scant information, I acquired a Sherline mini lathe in 2006 and prepared to build a reel. I had some 1/4" aluminum sheet, so I started with that and loosely followed the *Mechanix Illustrated* design. It took a few months but I was able to turn out a remarkably ugly and marginally functional reel! My biggest problem was the metalworking; I am primarily a woodworker and bamboo rod maker.

(Continued on page 36)



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I decided to turn my attention to building a wooden reel. There are lots of photos of antique wooden reels on the Web so it was reasonably easy to get started. I made three wooden reels in hard maple and flame birch. They all suffered from warping when wet. My nemesis was the reel foot. This part of the reel takes a lot of abuse and stress and wood just didn't seem like the right material. After messing around for a few months, I shelved the project and turned my attention to hook and line making. I continued to search for reel making information and came across several other reel builders willing to share some of their photos with me. I built two more aluminum reels similar to the earlier reel I made. But something was just not right. These reels required heroic effort to make and did not really match the simplicity of the wood strip rods I was building and experimenting with.

Then, in January this year I was looking through back issues of *Power Fibers* and came across Peter's article "Wooden' It Be Nice" published in Volume 23. Peter shows a photo of some of the brass reels he made and I immediately knew I had to track him down. I emailed Todd Talsma and asked if he had Peter's email address. After verifying that I was not a stalker, Todd sent me the address and the contact was made.

In Peter's reply, he included several photos of his reels in brass, copper and aluminum disassembled on his workbench. I knew I had found the simple reel I was searching for! Peter promised to help and I was excited to start.

Peter and I exchanged many emails and photos of his reels and my progress. Rather than provide explicit instructions and material requirements, Peter primarily described the process and let me explore and experiment on my own. At about this time, I discovered that John Betts had re-released his book through Lyon's Press and the new version included a page of color reel photographs! I was reel-y inspired!

(Continued on page 37)



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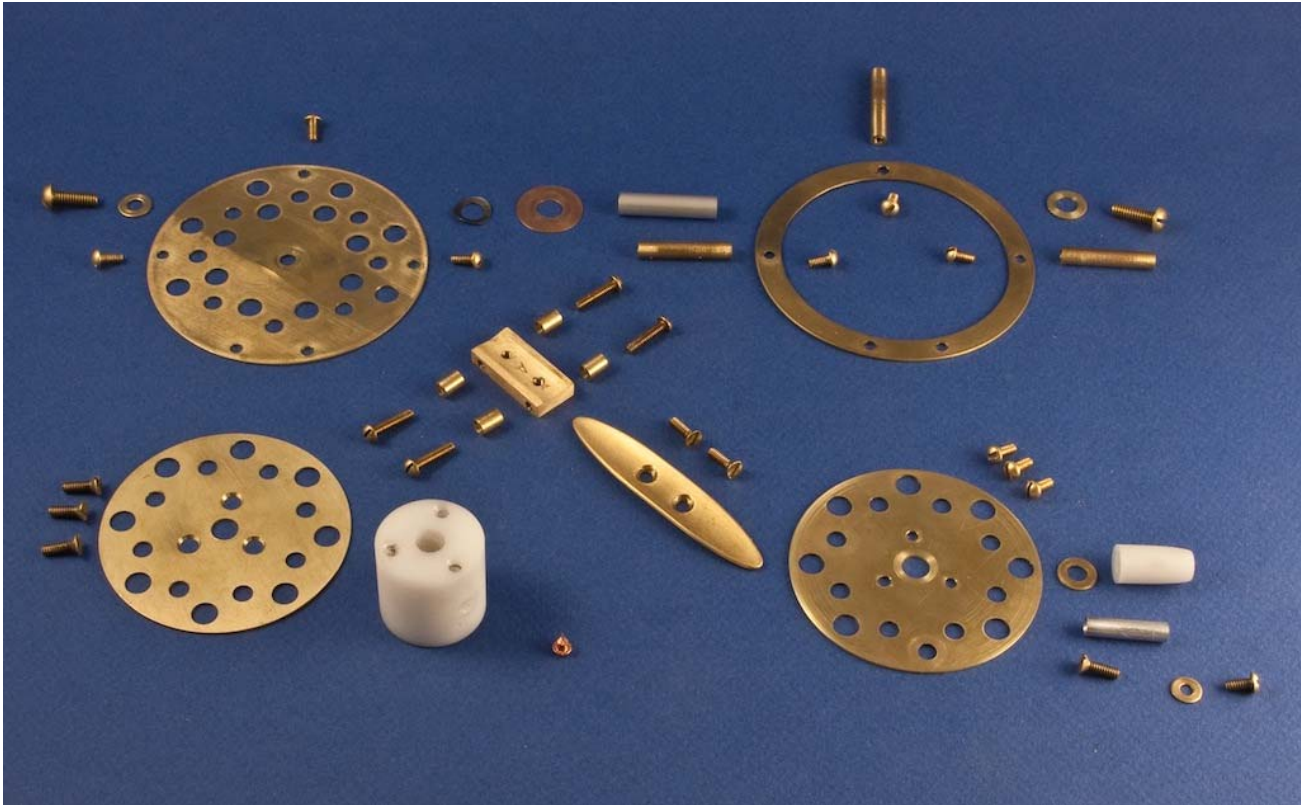


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**Figure 2: Simple Reel Parts**

Over many months, I hacked up brass sheets, turned Delrin spool hubs, and drilled and tapped more brass rods than I care to remember. The reels started taking shape. With each advance, I would ask questions and Peter would share his experience and ideas with me. In this way, I was being mentored but allowed to experiment and go my own direction. I adapted ideas to fit my way of working and the tools I have, and fit my design ideas. It was great fun. The reel foot was by far my biggest challenge. I don't know why, it turns out there are many ways to make a good reel foot without a lot of effort. But that first one was a big hurdle! **Figure 2** shows all the parts - ready to be polished and final fit and finish complete - that go in to one of my friction drag reels.

All of that is behind me now. I've since built 17 brass reels, refining my techniques and designs as I go. I started with the simple friction drag Peter and John use in some of their reels and then designed and fabricated a click-drag sys-

tem. During this time, I blogged about my efforts ([www.eclecticguy.com](http://www.eclecticguy.com)) and received an incredible number of emails and messages from folks who wanted to build their own reels. In response, I wrote a set of seven email "tutorials" that described how I build my simple friction drag reels and shared those with anyone who wanted to learn. The inquiries and feedback kept building. Then, in the spring, I was contacted by Whitefish Press and asked to write a reel building book! Since I already had a pretty good start with the email tutorials, I agreed.

Unlike many "how to" books, I wanted to make sure others can actually build a reel using my instructions and drawings. I decided to find at least five new reel builders - reelsmiths - actually use a draft version of the book and follow my instructions to complete reels. That way, I could be sure that the details were captured and the descriptions and drawings were accurate. The book, "*The Reelsmith's Primer*" is almost complete, I am working on the final photo-

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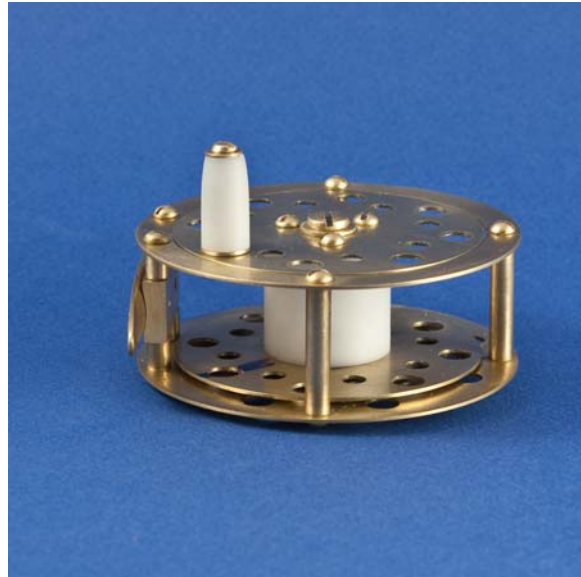
graphs, revisions, and edits now. The book teaches new reelsmiths how to build the reel shown in **Figures 3** through **5**. My journey also led me to create the Reelsmithing forum ([www.reelsmithing.com/forum](http://www.reelsmithing.com/forum)) as a community for reelsmiths to share information, designs, ask questions, and learn. Several reelsmiths have already posted photos of their completed reels and are exploring their own designs. If you are interested in reelsmithing, it is a great place to start.



**Figure 3: Reel Ready for Final Polish**



**Figure 4: Reel Foot Detail**



**Figure 5: Reel End View**

As I look back, I realize that reelsmithing is much easier than bamboo rod making. Surprisingly, reel tolerances are not as critical as bamboo taper tolerances and the investment in tools is significantly less. In fact, my book describes how to build a reel using only hand tools and an electric drill. The satisfaction of reeling in a fat Brookie on a handmade reel is an experience to remember!

### **Conclusion (Peter Dallman)**

This article, like *Power Fibers*, can show you just how much the art of the sport can be advanced with a few simple letters, some sketches or pictures, simple tools, and some effort. As much fun as the Internet is (I make my living from it) the written word and some sketches sent via the Pony Express could have accomplished the same thing. Michael said he has a foot pedal lathe that he could make a reel on and will try it someday soon. If you have modern tools, great, but all you really need is desire and about twenty bucks for materials (oh, and Michael or John's soon to be released book on reelsmithing wouldn't hurt).

I read Hogue Carmichaels book from the view-

*(Continued on page 39)*

point of a professional writer, fisherman and craftsperson and was envious of his adventure from the first page. As a result of that book I was very aware of the special nature of our shared journey and I tried to be careful in ensuring Michael shared the same quality of experience I shared with John. John and I had numerous conversations about what influenced us beyond fly fishing and how it impacted our ideas about this craft. We developed a philosophy first, the artifacts second. I have never met John or Michael in person, ever. I want to, but it never stopped us from accomplishing all this together until that day. It's not about technology but the power of the pen and the friends it can make. My relationship with John and having brought Michael in just as John had guided me is an experience that has taught me about so much and appears, as you can see, to be quite successful. This garden's roots are very deep. Now it's your chance to be a part.

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