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VOLUME FIVE



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**New Model  
2000 & 2200  
Column  
Machine**

*See Anatomy of  
a Bookcase - pg 8-9,  
to see which details  
were created using  
the Legacy*



## In This Issue . . .

### Featured Woodworkers

Jane Urban (Vernonia, OR) talks about her love of woodworking and her appreciation for the Legacy in her professional woodshop.

Marsha Benner (Mesa, AZ) came to woodworking later in life. After Marcia's husband Mike passed away she decided to try her hand on the Legacy.

### Anatomy of a

**Bookcase** Harry Tippetts (Hobble Creek Canyon, UT) shows off his latest project created almost entirely on the Legacy.

### Writing Pens of

**Distinction** Use the Legacy and a standard lathe turning pen mandrel to create these writing instruments "with a twist". Step-by-step instructions shown on the new model 200 craft machine.

### Creating Log

**Furniture** The Legacy is best known for its ability to create ornamental details. However, the Legacy is equally as powerful for creating construction details such as mortises and tenons, dados, etc.

**New Training DVD** Three hours of video instruction designed to teach the ins-&-outs of the Legacy. \$12 on DVD, or available on VHS for \$15.

**Using the 4-jaw Chuck and the Single Locking Collar** When milling multiple parts, such as ballisters, you may want to try using a 4-jaw chuck.

**Gallery & Testimonials** New photos and testimonials of Legacy users. Send copies of your photos to: Legacy Woodworking Machinery, 1122 S 900 E., Provo, UT 84606.

**Fall 2004/Winter 2005 Trade Show Schedule** More than 30 chances to see the Legacy demonstrated live.

**Legacy News** Sanding Mops for difficult to sand profiles. 2004 Tax savings on equipment purchases. Legacy model 500EX and 600EX Upgrade now available.

**New Models** The new model 2200 and 2000 column machines are built to take the weight of large diameter columns up to 130" in length. A comparable 10' hydraulic copy lathe (without the spiral and indexing capabilities) is priced at \$30,000. These models (priced between \$8400 and \$13,900) are a steal by comparison.

On the opposite end of the scale is the new model 200 pen and craft machine. Priced at just \$359, this small, yet powerful tool is designed with the craft and hobby market in mind, and features a variable z-axis for following patterns.



www.legacywoodworking.

FEATURED WOODWORKER

Legacy Builder:

Jane Urban

Terrebonne, OR

written by Jane Urban

I suspect that my interest in woodworking began with a lifelong love of trees — forests and everything associated with them. This passion for trees expanded to a growing awareness of the beauty and intricacy of wood, culminating in a fascination with antiques, antique restoration and all things architectural. But it was in 1992, on summer hiatus from teaching writing and my graduate studies in Medieval, British Romantic, and contemporary literature that I became fully inducted into the mysteries of woodworking.

That year my husband and I blithely embarked on the leviathan task of building a log home with our own hands. Even though we spent every spare minute at work on the house we did not move into our new home until 1996. My most pointed and painful memories of this time can be encapsulated by saying that ‘only the sustained use of an inadequate or an absolutely wrong tool can give one the deep appreciation derived of using the right tool for the job.’ I have since acquired some excellent tools, but given my style, preferences, and woodworking needs, the *Legacy* is, not just the right tool, but the tool I choose for performing tasks that range from the purely functional, to the pleasingly superfluous and much of the necessarily experimental stuff that goes on in between. Without my *Legacy* I would not be able to produce the kinds of furniture that I make.

Having surprised myself by feeling more affinity for woodworking and carpentry than commuting hither and yon to teach writing and composition, (I live 120 miles round trip from anywhere I could teach) my husband, Paul, and I made the decision to start the business that now operates under the name of *Wallflower Cabinetry & Other Fine Furnishings*, a small design and furniture building



Jane and her husband Paul moved into their log home in 1996 after 4 years of hard work. Jane's shop is connected to the home by this barley twist porch and runway which she created on her *Legacy* model 800.

**"I feel safer working alone  
on this machine [the Legacy],  
than any other"**

company located on our property in the coastal mountains of northwestern Oregon. Although meticulously crafted using time-honored methods of joinery, *Wallflower's* heirloom quality furniture features more imaginative adaptations of traditional design elements rather than adhering to the rigid constraints of period perfect reproductions.

I love antique furniture (relishing, in particular, the idea that objects of utility can at once be functional, durable and beautiful) and I have learned much of what I know about craftsmanship from working with old pieces. In the course of learning a craft, every individual finds his or her work influenced by their preferences in art, music, literature, work, etc. and the way those interests and experiences combine in the human imagination give form to individual ideas about design, color, proportion and balance. Almost everything we see is reminiscent of something else but what distinguishes a person, a creature, an object



of art or craftsmanship is the individual character either suggested or otherwise expressed by that being or object. I appreciate austerity but tend to favor more elaborately detailed moldings and turnings in my own work.

Having said all that, I can now state why of all the machinery in my shop my little *Legacy Ornamental Mill* (Model 800) most simply, safely and effectively allows me to realize my own peculiar notions about how I want a piece of cabinetry or furniture to look and that is why I value it so highly. So much of the individual character of a piece resides in the execution of details. I take great pleasure in the fact that I can go to my *Legacy* and, for example, lighten the severity of a ponderous old molding profile by adding buttons, dentil or rope detail. The basic stability of the way the router is mounted in the *Legacy*, the pure ingeniousness of its three axis design and its lock down capacity make operations simple, straightforward and most importantly, safe. If you suffer any wariness or just have a good healthy

*Top: Jane Urban combines her Legacy with her lathe to get the best of both worlds. Right: The barley twist legs, the joinery, and the scalloped shelves on this end table are indicative of the types of work Jane Urban completes on her Legacy.*

***"Given my style, preferences, and woodworking needs, the Legacy is, not just the right tool, but the tool I choose for performing tasks that range from the purely functional, to the pleasingly superfluous and much of the necessarily experimental stuff that goes on in between. Without my Legacy I would not be able to produce the kinds of furniture that I make."***



respect for woodworking equipment you will appreciate the enormous difference in the way you are able to function independently in the shop. I live a long way from a hospital and these concerns are always foremost in my mind, but I find that the degree to which I feel confident and safe using a machine to be commensurate with the amount of pleasure and ease I derive from performing a task in my shop. This is not to imply that any and all woodworking machinery including the *Legacy*, requires anything less than full attention and careful maintenance when operating. The *Legacy* allows me to safely perform tasks using bits of cutting depth and diameter that, prior to my acquaintance with the machine, I would have reserved for the shaper—the ultimate beast of machines that I would never use without someone in attendance.

Because *Wallflower Cabinetry* was founded on the principle of conservation and reuse I turn table legs, split turnings, spindles and newels from reclaimed lumber salvaged from either fallen or derelict structures dating from the last two centuries. Without the plunge cutting capacity the *Legacy* affords me I would be unable to achieve the deeply cut coves and filets on much of the overly seasoned and difficult lumber I use. I tend to rough out or round the billet on the lathe and then use my *Legacy* with a template to index for placement and depth of cuts along the circumference of the leg then I return it to the lathe to refine the details.

I would encourage anyone interested in expanding his or her woodworking capabilities to explore the potential of this machine. I am in my shop at least six days a week and my *Legacy* rarely sits idle for more than a day or two and I still haven't determined the full extent of its capabilities.

*Jane Urban's Wallflower Cabinetry is located in Vernonia, OR. Jane can be reached at: [www.wallflowercabinetry@aol.com](mailto:www.wallflowercabinetry@aol.com)*

*Three of Jane Urbans examples of "ponderous old molding profiles" that have been "lightened" with ornamental details created on the Legacy.*

**"... the Legacy is the surest way that I have found to create identical pieces."**



FEATURED WOODWORKER

Legacy Builder:

Mike & Marcia Benner  
Mesa, AZ

*Author's Note: This is the story of Mike and Marcia Benner. Mike Benner passed away in February of the year 2002. Though I never had the pleasure of meeting or speaking with Mike, I gather from his wife that he was a very caring and talented man.*



**M**ike Benner was a professional patternmaker during his lifetime. Even after he retired, Mike kept a wood shop of almost commercial proportions in his basement, complete with an old Olive patternmaker's lathe. Mike, devoutly religious and generously gifted, crafted furniture, bowls, vases and more for his local house of worship.

After Mike's first wife died, he traveled to Arizona from Pennsylvania for health reasons. He met Marcia at a housewarming that she was hosting. During that event Mike told Marcia, 'I'm looking for a wife.' Recently widowed she answered, 'Well I'm not shopping!' Though Marcia had not intended to go "shopping," she was intrigued by Mike Benner and they started dating soon thereafter.

When Mike and Marcia first started dating, Mike mentioned that he was looking for a machine that could turn spirals, so Marcia started surfing the internet. She connected to one of the many bulletin boards that were available and conversed with someone about a unique machine called the *Legacy Ornamental Mill*. She was given the address of Legacy Woodworking Machinery's Canadian representative who, in turn, asked the main office in Utah to send Mike an information packet, which they happily did. (This was during the summer after their marriage in April, 2000.)

Mike was so intrigued with the *Legacy* that during the next trip from Pennsylvania to Arizona he & Marcia stopped by Legacy's office in Provo, Utah for a demonstration. Consequently, Mike ordered his machine and stored the 9 boxes under his mobile home in Arizona to await their spring trip back to Pennsylvania. That summer in Pennsylvania, Mike had the opportunity to try out his new *Legacy*. "Mike loved his machine. He never sold the things he made on the *Legacy* because he felt most people would not appreciate all that he had put into them. He did, however, give a few of his creations to friends that he thought would cherish them." said Marcia.



*Marcia Benner uses her scroll saw to create the bases for these Mancala boards, and the Legacy is used to route out the dish for the game pieces.*

***"This machine is fun. I am easily able to make unique and unusual pieces – there is so much room for creativity and individuality."***





*Mike Benner first turned the planter stand on his lathe and then created the hollow spiral on the Legacy. This planter holds a glass vessel, making it not only decorative, but functional as well.*

Marcia enjoyed spending time with Mike in his shop and asked a lot of questions. Marcia said that, "I always liked to do things with my hands, but never tried woodworking." Marcia finally asked so many questions that Mike told her, "Since you're so interested in woodworking; I'm going to buy you a scroll saw." And he did – for her birthday.

Mike forfeited a third of his shop to the curious Marcia and her scroll saw. Marcia stated: "I didn't always know what I was doing, but I knew I could always get help from Mike if I ran into a problem."

Sadly, Mike Benner passed away in February of 2002. After the funeral, Marcia hired a moving van to transport her things from their Pennsylvania home to her home in Arizona. "I didn't have a lot of possessions at the Pennsylvania house and the moving people kept asking me what more I wanted to put

on the truck. Originally, I had planned on leaving the Legacy for Mike's son, Neal who had never done much woodworking. After giving the matter a second thought, however, I decided it would probably not be used by Neal." Since it not only represented a fairly large investment but was a special link with Mike she told the movers to load it aboard.

Mike's Ornamental Mill sat in Marcia's shed, unused, all that summer. Since Arizona summers are hot there was not much incentive to experiment with it. Last winter, however, a neighbor helped Marcia make room for her scroll saw and Mike's Legacy in her small shop. She is now torn between using her scroll saw and learning to master the Legacy Ornamental Mill. "I'm learning all sorts of new things. I had never used a band saw before and I didn't know a bit from a blade. But now I'm learning how to use a plane, what joinery is and how to use stains. Even though I still consider myself a greenhorn, I'm having fun learning."

"I decided to learn to use Mike's Legacy because I wanted to use the machine in Mike's honor and because it would also be fun to see what I could do with it. I recently had my shop remodeled and insulated. Anytime I have a chunk of time, I'm out working with wood and I'm progressing. People even come to see some of the pieces I've made. A few months ago a nearby Legacy owner was supposed to come to my shop and give a demonstration on how to become more efficient when using the Legacy. Through a misunderstanding, he wasn't able to make it, and I had ten eager male spectators waiting in my shop! I simply told them that I didn't know much about the machine, but I would show them what I could – and I did. They were impressed at what I could do, even though I had little previous experience." "Anybody can do this. All I have to do is turn the Legacy on and everybody says 'Wow!' The machine really runs itself. Even my practice pieces look impressive. Though I'm a beginner the end product looks good – even though it might not be a finished piece. This machine is fun. I am easily able to make unique and unusual pieces – there is so much room for creativity and individuality. The Legacy is well worth the money. I frequently give friends copies of Legacy's CD-ROM or their training videos so that they can see what can be done – they really get excited. As someone who has been mystified by machinery for so many years, I get tickled when I'm changing gears or making adjustments to the machine. The design of the Legacy makes it all so simple. I can't believe I'm doing this . . . It's just so neat!"



## Anatomy of a bookcase

Created from white birch by Harry Tippetts, Hobbie Creek Canyon, UT.  
The following details were created using the Legacy Ornamental Mill

● **Dentil Molding -**

Flat moulding created using a flat milling table.

● **Indexed Medallions -**

Created using the rotary indexing table.

● **Arched Molding -**

Router bit profiles and the circle cutting center



Harry Tippetts created the column desk featured in Volume 4, we couldn't resist showing Harry's latest work. This bookcase was created almost entirely on the Legacy. According to Harry "the only other major tool that touched this project was a table saw."

● **Turned Caps & Bases -**

Milled round between centers using router bit profiles.

● **Turned Columns -**

Milled round between centers.

● **Flutes -**

Created using the indexing head.

*Editor's Note: Many beginning and novice woodworkers will look at this project (as well as others featured in the pages of Legacy Ornamental Milling Magazine), admire its beauty, and only hope that some day this level of skill could be personally achieved. The truth is however, (and this from one who has no formal training in woodworking) **this project is well within the reach of almost any Legacy owner.** Having made such a claim, page 7 attempts to break this project down to its basic components and operations. Furthermore, the new 2 disc video training (DVD format \$12, or VHS format \$15) (see page 14) covers the principles for creating all of these components. Enjoy!*

## Fluted Columns

Start by creating 2 round and fluted columns. These columns will be made as full rounds and then separated into halves, thereby creating the 4 half-round columns as seen in the picture (far left) on page 6. These columns can be glued up as solid or hollow core (Fig A). If you choose to save material and glue up for hollow core columns, obviously you will have to put panels on both ends in order to hold the column into the machine (Fig B). Whichever way you decide, the important thing to remember is that the columns will be split apart once they have been milled round and fluted. Figure C shows a column still in the machine. After it was milled round we locked the indexing pin and used a 1/4" straight cutter along the x-axis to cut the column in half. Of course this is only done once the columns have been milled complete.

Fig. A



Fig. B



Fig. C



## Turned Caps & Bases

Caps & bases can be created as part of the columns or as separate pieces. It is really nothing more than creating turnings (between centers) based on the shapes of router bit profiles. The Legacy design kit can be a valuable tool when it comes to laying out a design for these turnings. Once you arrive at a desired design, purchase the necessary router bits to complete the turnings. Like the columns, these caps & bases are created with two halves (Fig D) - these halves can be joined together with craft paper and glue, or double-face tape. Once turned, you simply pull them apart.

Fig. D



## Dentil Molding

Although dentil molding can be purchased at most local supply stores, custom moldings can easily be made using a flat milling table and a straight router bit. With a stop set on the y-axis you can control the length of the individual dentils. The x-axis scale serves as an index to create the proper spacing, every 1/2" or 3/4", as desired (see also Jane Urban article, page 5 for sample designs).

## Arched Molding

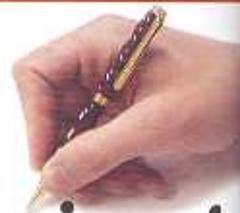
Using the circle-cutting center to create arches and circular moldings amounts to nothing more than spinning a platter on a pivot point. As the material rotates the router cuts the material in a circular arch.

## Indexed Medallion

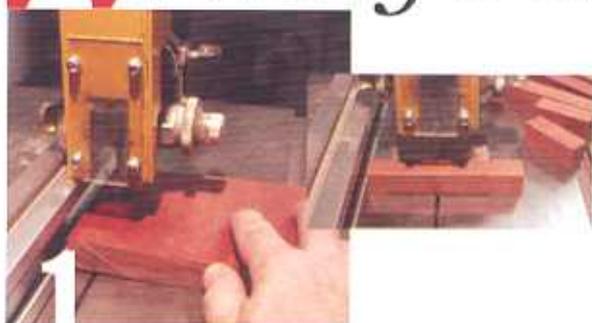
The indexed medallions are created as separate pieces. The flutes are created using a 2" core box bit and cutting down the center line. As the cut gets closer to the center it removes material from the previous flute causing the tapered effect of the cuts. The inner medallion is created the same way, it just uses a smaller core box bit and a smaller radius.



Editors Note: Directions are for slim line design twist pens created on the new model 200. This pen features a 3 start rope design using a 1/2" cutter (Magnate #7597 - 1/4" shank, or #7591 - 1/2" shank) and a 1 1/2" pitch. When using other Legacy models, this pitch is achieved by using the .25X gear reduction and the "C" drive gear.



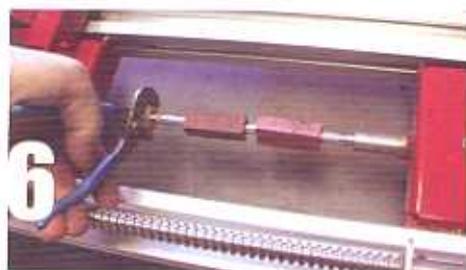
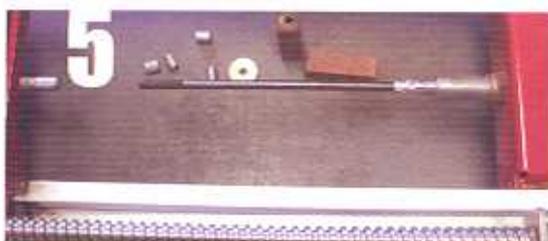
# Writing Pens of Distinction!



**step1** Blanks should be cut 1/2" square by 2" in length. **step2** Drill the blanks with a 7mm drill bit. **step3** Barrels are then glued with a liquid polyurethane glue which expands as it dries. **step4** Once the glue has dried, use a barrel trimmer to clean out any excess glue and square off the ends of the pen blanks. **step5** A standard pen mandrel is placed into the machine. (Note: The photo shown is of the model 200 - in this case the #2mt end of the mandrel is removed. The mandrel then threads into the end of the drive shaft. If you are using other Legacy models, the #2mt shaft is mounted into the machine.) **step6** Brass spacers should be used on each end to avoid running into the steel parts of the mandrel. The knurl nut should be tightened securely against the spacers so that the pen blanks are unable to spin around the shaft and the

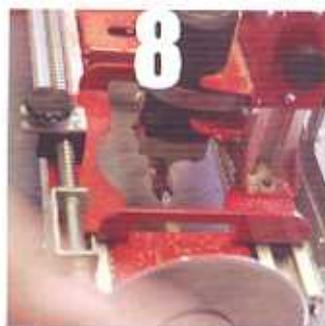


tailstock is locked against the mandrel. **step7** The depth of the cutter is set by placing the tip of the router bit on the brass spacers and inserting a business card between the bit and the spacers.



TECHNIQUE

**step8** With the split-nut locked onto the lead screw, rotate the handle and cut the first pass. **step9** With the first pass cut, loosen the capscrew on the end of the index gear. **step10** Use the small handle to rotate the small gear 4 positions. This action will rotate the pen blanks to the next position without moving the router. **step11** Tighten the cap-screw. **step12** Drive the router back to the beginning point and cut the second pass. **step13** Repeat steps 9 - 11, and then cut the third and final pass. **step14** With the split-nut open, hold the router at the ends of each blank and rotate the workpiece (Note: opening the split-nut means the router will **not** travel as the workpiece is rotated). This will create a smooth transition from the metal pen parts to the wooden body of the pen. **step15** The completed pen blanks.



## Using the Legacy to create log furniture

The indexing system, the ability to mill stock round, and the stock capacity of the Legacy, all combine to make an extremely efficient method for creating log furniture.

This bed (right and below) was created by brothers, John and William Hennen entirely on the Legacy Ornamental Mill.



Created by John & William Hennen



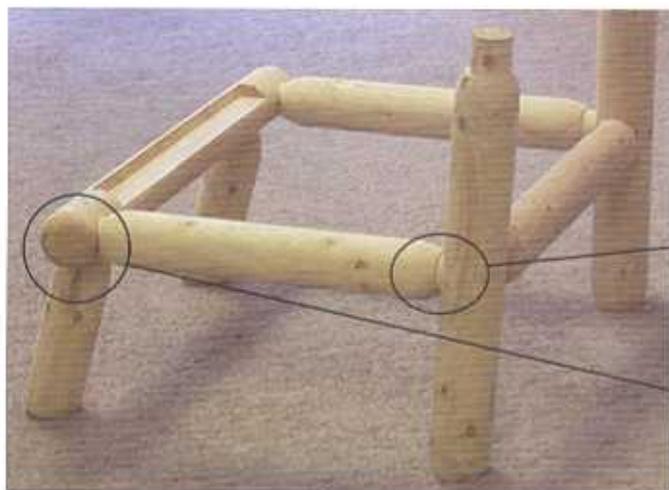
Milling dados for panels; and mortises and tenons for joinery, Harry Tippetts demonstrates the power of the Legacy for creating not just ornamental details, but construction details as well. The desk (below) is made of western cedar.



Created by Harry Tippetts

**IDEA CORNER**

Created by Bart Sperry



Using the indexing system and the adjustable bed, Bart Sperry was able to position the mortises on the correct angle to give a log chair (left) a natural sitting position.

Note: The adjustable bed was used on the back legs, giving it a maximum  $6^{\circ}$  angle (depending on model used).

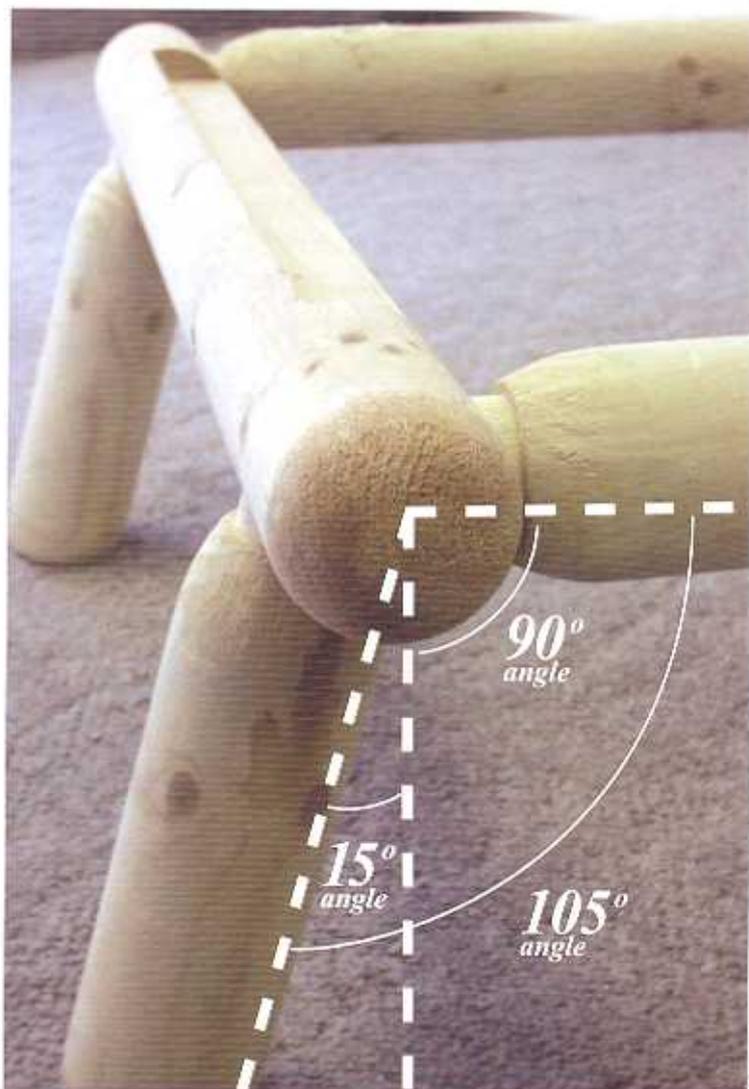
The angle of the front legs was created using the standard 24 position indexing plate (described below).

Using the indexing system the workpiece is locked into place. A 2" diameter surface planing bit was then used to mill out the round mortise.



The front legs (right) are kicked out an extra  $15^{\circ}$  from a right angle by using the standard indexing plate (each hole is  $15^{\circ}$ ;  $360^{\circ}$  divided by 24 positions =  $15^{\circ}$ ). A  $90^{\circ}$  angle for the mortises is easily achieved by rotating the workpiece 6 holes. By advancing the indexing one additional position, Bart was able to position the leg at a  $105^{\circ}$  angle.

Editors Note: Keep in mind that other indexing plates are available for the Legacy. As an example these index plates can give you  $9^{\circ}$ ,  $10^{\circ}$ ,  $11.5^{\circ}$ ,  $12^{\circ}$ , &  $12.85^{\circ}$  per hole. Custom index plates can also be created by calling 800-279-4570.



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## Using the single locking collar and the 4-jaw chuck

The Legacy method for holding the workpiece between centers utilizes the mounting hubs and drive center. This method is a simple solution and works well. However, if you have multiple parts to make (i.e. ballisters) you may want to switch out the drive center with a 1 x 8tpi 3-jaw, or 4-jaw chuck. A jaw chuck will reduce the number of mounting hubs needed and save the additional time required to mount them to your workpiece. If you decide to use a jaw chuck - these tips may be helpful.



Vicmarc 4-jaw chuck

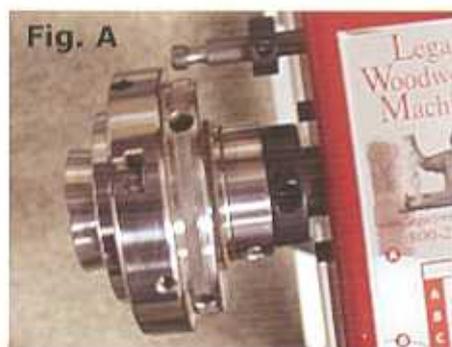


Fig. A

In order to secure the chuck tightly to the spindle shaft the threads must bottom out. In order for this to happen on the



Fig. B



Fig. C

Legacy, the jaw chuck will inhibit the use of the indexing pin. To solve this problem it is recommended that a single locking collar (\$6.00) be used to space the jaw chuck away from the headstock (Fig. A). Start by removing the drive center from the spindle shaft (Fig. B). Slide on the single locking collar (Fig. C) and lock it securely around the spindle shaft. The jaw chuck now threads onto the spindle shaft and bottoms out against the locking collar (Fig. A), thereby rendering the indexing pin free to be used.

### Round Stock Jaw Capacity:

from 1 1/4" - 2 3/4" diameter



The jaws on the chuck can accommodate various sizes of stock and are designed to close concentrically on the material.

Note: The capacities cited are for the Vicmarc brand 4-jaw chuck (pictured here). Check with your supplier for capacity on other brands.



### Square Stock Jaw Capacity:

from 1 3/8" - 2 1/2"



Open Out  
Jaw Capacity:  
from 1 7/8" - 3 1/4"  
diameter hole



GALLERY

With just ten minutes of setup on each column, I then walked away and let the Legacy go to work. The finished columns sold for \$2000.00 each. This machine puts a bullet right between the eyes of a CNC machine.

Dynamic Cabinet Designs



Created by Larry Thompson

Created by Frederick Haas



My wife and I first saw the Legacy at a woodworking show in NY state. After the demo we were walking around and Marge said "You need that machine". I was a little shocked because it's not really a cheap date! She persisted, and . . . that was a pivotal point in my woodworking.

Don Butler

Created by Hal Shearer for M&M Woods

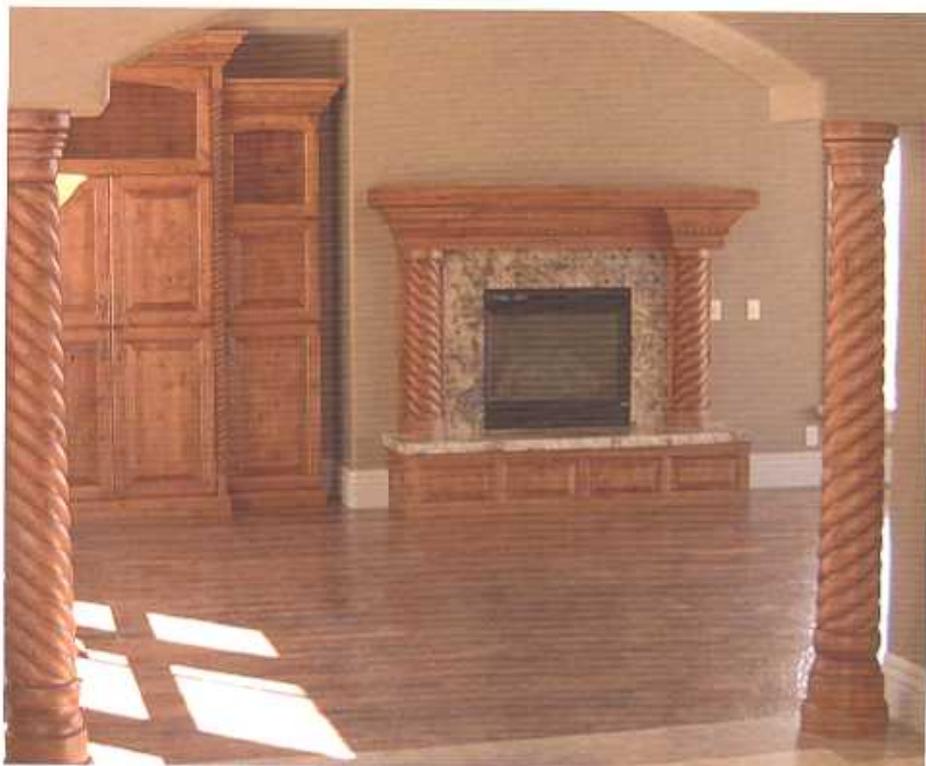


Created by Dr. Courland Smith

Created by Joe Sarich



GALLERY



Created by Robert Rask



Created by  
Tom Wickham  
& Mike Eaton



Created by Dave Calder



*The Legacy milling machine has added a lot of fun and flexibility to my work. It is an amazing machine. People are always asking me "how did you do that". Before explaining how the machine works, I usually tell them it was done with smoke and mirrors.*

*Recently my neighbor, Mike Eaton (top photo) who is a professional musician asked me if I could build a Lap Steele Guitar. I told him I didn't know anything about making guitars, but would discuss it with him. I have always been interested in someday making a musical instrument and decided to take up the challenge. I used his knowledge of the hardware components in a guitar, and decided to first make a prototype to determine if it would be feasible to make the instrument.*

*The prototype proved to be a success, so we went ahead with making the "real" guitar. In fact, I decided to make two guitars so we could each have one.*

*One of the design considerations was to make the face of the guitar with book matched Bird's Eye Maple. The resaw of the maple went okay, but I knew that if I sent the freshly sawn faces through the planer, we would have a lot of chip out. The Legacy was the answer to this problem. I used the Legacy to plane the saw marks from the maple and all that was needed was some sanding and the book matched maple was ready to apply to the Eln body. We then attached a fret board made from Paduk, with inlaid maple frets and mother of pearl markers. The head stock was finished with a veneer of Walnut Burl.*

Tom Wickham



Created by Richard Carewicz