

METALWORKING BOOK ONE

Techniques

- Engine Turning Made Easy
- Improve Your Mill/Drill Machine
- Greater Precision for Scroll Chucks
- Lathe Tips to Speed Setups
- Squaring the Circle
- Lathe Shear Pin Modification
- Tapers on Oblong Pieces
- Basic Metal Finishes
- An Untapped Source for Cast Iron

Lathe Accessories

- Old Lathe Collet Adapters
- A Small Quick-change Tool Post
- Automatic Carriage Stop
- A Pipe Center for Your Lathe
- Adjustable Pop-stop for a Myford Lathe
- A Reverse for a Small Lathe
- A Quick-change Gearbox for the Atlas 6" Lathe
- Make Your Own Collet Chuck
- A Shop-made Expanding Mandrel
- Steady Improvement
- A Ram Tailstock with a Long Lapped Hale
- A Lathe Four-way Tool Turret
- Lathe Threading Stop
- A Change-Gear Bracket
- Cross-feed Lever
- Can You Handle It?
- Reversible Lathe Die Holder

Milling Accessories

- Making a Fly Cutter
- Surface Grinding on a Vertical Mill
- A Vernier Dividing Head
- A Simple Rotary Table
- Button V-Block
- Making a Milling Saw Arbor
- Add an Improved Downfeed Scale
- Saddle V-Block
- Modifications to Mill/Drill Attachments
- A Milling Column
- Two Handy Jigs
- A Supplementary Tilting Milling Table

Shop Improvement Projects

- GripsAll Indicator Base
- A Rocking, Swinging Grinder Table
- A Band Saw Speed Reducer

A Double-ended Dial Indicator Adapter
Making a Cylindrical Square
A Parallel Arm Scroll Saw
Machine Tools for Woodworking
Belt Sander
A Four-Station Grinder
Model Builder's Hand Vise
A Broad Range Wing Divider
The Presentation Swarf Collector
Make a Quickie Hardness Tester
A Depth Gage for an Imported Drill Press
Drill Grinder
Rapid Production of Dividing Head Index Plates
Better File Handles
Adjustable Try Squares
A One-Evening Project Brass Hammer
Two designs for Welding Tables
Unorthodox Mill/Lathe Grinder

Hobby Projects

Curved Spoke Flywheel
A Scale Model 32-Pounder Seacoast Cannon
A Huff 'n Puff Engine

METALWORKING BOOK TWO

Techniques

Taper Shank Turning Made Easy
A Mill-drill Repair
Making Up Band Saw Blades
The Mathematics of a Dividing Head
Milling Pockets
Single Thread Worm Drives
In the Home Machine Shop
Simple Tooling for Model Size Shoulder Bolts
Shower Power

Lathe Accessories

A 5C Collet Closer for your Shen-Wai Lathe
Risers for a 6" Atlas or Craftsman Lathe
A Rolling Tailstock Arbor
Spindle Driving Handle for Emco Super II Lathe
A 5C Collet Fixture Tailstock
Improving the Quick-change on a Small Lathe
Making a Spring-loaded Center
Square Collets
A Tailstock Tap and Die Holder

Bed Extension for Atlas and Craftsman Lathes
Single Wheel Knurling Tool
Stay-put Lathe Carriage Lock Wrench
Lathe Carriage Way Covers
A Lathe Rack Repair Using a Single Point Tool
Power Feed Ball Turning Fixture from Scrap Box Materials
Adjustable Pop-stop for the Myford Lathe
Zero Set Micrometer Dial

Milling Accessories

A Small Boring Head
Z-axis Downfeed for a Mill-drill Machine
An Economical X-axis Readout
Coaxial Indicator
Spindle Lock for a Mill
Milling Cutter Arbor
Variations on a Button V-block
Tips and Tricks

Shop Improvement Projects

A Coolant Tank and Pump
On the Cutting Edge
Soft Faced Hammer
A High Efficiency Screw Press
A Die Stock Plus
A One-handed Depth Gage
A Small Sheet Metal Brake
Indicator Clamps for Lathe Beds
Adjustable Angle Plate
Conservative Coolant Applicator
Quick and Easy Electric Furnace
A Shop Hot-tank
Slot Anvil Depth Gage "Mike"
Height Gage Conversion and Attachments
A Universal Belt Tensioner
Wire Clamps – A Unique Third Hand
Load Cell (Hydraulic Scale)
Tapping Block
A Single Beam Trammel
A Small Tool and Cutter Grinder
Fastener Gauge
A Glass Cutting Helper for your Drill Press

Hobby Projects

Elliptical Rotary Engine
Give Metal Spinning a Whirl!
Spinning Your Own Oil Can
A Knife Blade from Scrap
Conversation Piece Two-headed Bolt with Nut

Two-cylinder Oscillating Steam Engine
Eight-tube Wind Chimes
Finger Treadle
A "Skypod" for the Traveling Photographer

METALWORKING BOOK THREE

Techniques

Conversion to Three-phase Power
Expanding Your Arbor Press Capability
Holding Thin Material for Machining
Machining an Angle Plate
The Asian Connection
Drilling Accurately Centered Cross-holes In Round Stock
Chatter and the Cutoff Blade
Machining Internal Threads -A Different Approach
On The Subject of Stiffness and Overhang
The Rise and Fall of the Taiwanese Band Saw
Truing the Column of a Mill-Drill Machine
Recycling a Mirror
Turning Square Stock Round
A Welding Tip

Lathe Accessories

A Home-built Gearbox for Your Atlas 6" Lathe
Lever Operated Tailstock
A Low Cost Adjustable Counterbore
A Quick-Acting Tailstock Lock
Drip Oiler
Tailstock Die Holder
An Easy Way to Make a Multi-Position Tool Post
Faceplates for Gap Bed Lathes
A Lever Tailstock Feed for the Center Lathe
A Lever-operates Tailstock Clamp For Atlas Type 12" Lathes
Making a Set of Boring Bars
Reversible Lathe Carriage Stop
Spindle-mounted Collet Attachment for 12" Atlas Type Lathes
A Chip Breaker

Milling/Drilling Accessories

Two DROs Under \$125 Per Axis
Mill Vise: Rework for Precision
Instant Soft Jaws for the Vise
Economy Substitute for a Bridgeport
Mill/Drill Speed Reduction
Reamers for Odd Sized Holes
X and Y Scales for the Mill
Getting Rid Of Chips on Your Band Saw

Shop Improvement Projects

Drill Sharpening Fixture and Point Splitter
Making an Index Plate For a 4-3/4" Center Height Dividing Head
End Mill Sharpening Holding Fixture
Hot Dip Tool Protection
Mini Square Hole Punch
A Ring Furnace
Rules - Differential and Difference
Tool Tower
A Diamond Dresser
Flare Nut Adapter Tool
Building a Band Saw
The Dedicated Topper
A Great Little Clamp
Internal-external Center Finder
A Heavy Duty Belt Grinder
An Automatic Punch
A Rugged Tap Wrench
A Very Handy One-inch Height Gage
A Precision Metal Stamper
Drop-by-drop Cutting Fluid
Boring Thin-wall Tubing

Hobby Projects

From Shears to Brake: A Boxing Story
A Novel Tripod Ball Head

METALWORKING BOOK FOUR

Techniques

Sphere Machining
Aligning a Lathe
Duplicating Radii
Adapting a Palmgren Drill Press Vise for Use on Sherline Machines
Methods for Success: Indicating and "Picking Up"
Machinable Angles
Plus or Minus? Tolerancing
Modifications to the Sherline Mill
A Motor Drive Modification for the Sherline Mill and Lathe
Winding a Coil for a Magnetic Chuck
V-blocks in a Vise
Shoptask Modifications

Lathe Accessories

A Lathe Milling Attachment
A Mini Mill Attachment
A Two-Jaw Lathe Chuck
A Lathe Boring Bar Set
A Shop Built Taper Attachment for Your Atlas 6" Lathe
An Opensided Toolholder

Last Pass Indicator
P-Style Upside Down Partoff Blade Holder
Lathe Adapters
Modifications to the Atlas 6" Lathe
Make a Thread Dial for your Lathe

Milling/Drilling Accessories

Turn-O-Mill
A Carriage Stop for the Mill
Milling Machine Power Feed
A Milling Machine Vertical Power Feed
An Inexpensive Power Feed for the RF-30 Mill/Drill
Make Your Own Edge Finder
Spindle Clamps for a Mill/Drill
Corner Locator
A Poor Man's Electronic Edge Finder
Universal Drill Press Hold Down
Timesaver Clampset
A Milling Table

Shop Improvement Projects

A Pantograph Label Maker
Home Sandblasting Cabinet
Farrier's Forge
A Compact Carousel Tool Rack
Two Small Presses
Build a Metal Slicer
An Abrasive Belt Slitter
An Elegant Long Reach Thickness Caliper
A 6" Capacity Precision Height Gage
An Inexpensive Air Compressor
A Versatile Bubble Protractor
Band Saw Blade Grinder
A Hole Punch for Thin Material
A Pencil Attachment for the Universal Surface Gage
A Machinery Oil Gun for Under \$10
New Uses for Old Tools
Ho-hum- Another End Mill Sharpening Jig
Three Ideas for a More Efficient Shop
Tap Wrench Guide with Depth Gage

Hobby Projects

The Tripod Eliminator: Making a Stand for Better Pictures

METALWORKING BOOK FIVE

Techniques

Hole Locating
Using the Four-Jaw Chuck
Anaerobic Adhesives for Machinery

Metric Thread cutting with an Eight tpi Lead Screw
Turning Tapers in the Lathe
Measuring Angles
An Unorthodox Spur Gear
A Second Lease on Life
Multi-Patters – Economy in Numbers
A Simple Way to Measure Inside Diameters
One Thing Leads to Another

Lathe Accessories

A Simple Lathe Mill
Keyway Shaping – A Lathe Attachment
Tool Height Indicator for the Lathe
A Clutch for your Lathe
A Keyseat Cutter for the Lathe
A Multi-boring Block for a 9" Enco Lathe
An R8 Lathe Collet Holder
A Low-cost Quick-change Tool Post

Milling/Drilling Accessories

A Fine Downfeed for the Jet Mill/Drill
Life with a Mill-Drill
Another Power Feed Drive for a Mill
For Unobstructed Milling, Keep a Low Profile
Power Table Drive for a Mill-Drill Machine
Workholding for an Asian Mill-Drill
Spindle Clamps for Imported Mill-Drills

Shop Improvement Projects

Electrical Phase Converter for Shop Motors
Locking Pliers Jerk Puller
Hand Mill Restoration
A Tool and Cutter Grinder
A \$50 Power Table Feed from Odds and Ends
A Set of Precision Balancing Ways
Making Ball Handles – A New Approach
A Shadowgraph
An X, Y Stage for the Home Constructor
A Lamp Base for the Shadowgraph
A Three-Jaw Chuck Center
A Tapper
Spindle Oscillator for Sanding and Honing
A Tool Block Carousel
A Simple Stepper Motor Drive
Zap an Import: Build it Yourself
Lathe Bit Grinding Jig
A Mathematical Approach to Knurling
Turn Scrap into Workstands
An Edge Finder

Hobby Projects

Atkinson Cycle Engine
A Homemade Wheel Balancer
A Freedom Tripod Head
Construction of Pottery Kilns (Heat-Treat Furnaces)

METALWORKING BOOK SIX

Techniques

Forming Scale Bolts and Nuts on the Lathe
A Word for Loctite
Inertia Welding
Improved Tooling for Threading and Boring with the Unimat DB200 Lathe
Turning Corners with a Lathe – Setting up a Machine Shop in a Walkdown Basement
Making Gears Using a Hob
Using the Milling Machine as a Copy Stand
Variable Frequency Drive Applications
Indicating a Bridgeport Head
Reversing Rotation on a Single Split-phase Motor
Drilling Holes in Hard Material

Lathe Accessories

A Milling Attachment for a Small Lathe
A Quick-change Tool Post
A Dividing Head for the Taig (Taig/Petrol) Lathe
Lathe Index and Crank
Update and Improvements for the Craftsman 109 Series Lathe
Building Your Own Collet Chuck
Automatic Carriage Stop for a 6" Atlas Lathe
A Tool Post Grinder
Adding Muscle to your 9" x 20" Bench Lathe
A Metal Lathe Mount for a Laminate Trimmer
Taiwan Lathe Problems
Carbide Cutting Tools for the Lathe
Improving the Lathe Steady Rest
A Simple Indexing Attachment for your Lathe
A Quick-release Tailstock Lock for Small Lathes
From Pain to Pleasure
An Adjustable Cross-slide Nut
Power Drive for Lathe Chucks
Follower Rest

Milling/Drilling Accessories

Sawfeed
Rear Tool Post (Reversible) for Atlas or Craftsman 6" Swing Lathe
Rong Fu Headlock
Making a Small Split Collar
Mill-drill Power Feed
Quick Quill Stop

Addign Some Stops to Your Sherline Mill
Milling Head Alignment Wheel

Shop Improvement Projects

A Magnetic Base
Arbor Press
Tapping Station
How Healthy is Your Shop?
Die Maker Buttons
Fixture to Hold Small Pieces
Make a Tap Center
An Edge Finder
A Riveting Press
Handy Shop Odds and Ends
A Chuck Lifter
Getting a New Vise in Shape
Expanding Mandrels
Build Your Own Geared Rotary Table
A Direct Reading SFPM Adapter for the Common Speed Indicator
The Universal Lamp
An Index with R8 Collets
A Magnetic Back for a Dial Indicator
Two Tools for Shop Angle Measurements
Quick-change Indicator Holder
Single-phase to Three-phase plus Speed Control
Equipment Lights
The \$20 Drip Coolant System

Hobby Projects

A Micro Drill Press
Lemon Squeezer
Random Orbital Sander
Build a Circle-cutting Attachment

PROJECTS ONE

Techniques

Milling on a Drill Press
Conserving Cutting Oil
Modifications to the Machinex 5 Lathe
Finishing Contoured Metal Castings
Sharpening Milling Cutters
A V-block Drill Guide
Handling Large Bore Tubing
Simple Chucks to Protect Finished
Versatile Fastener
Improving Your Lathe with a Dial Indicator
A Built-in Drill Guide
Balls and Bull Noses

Practical Design hints-Machining
Practical Design hints-Assembly
How to Get Things in Line Again
Drill Chuck Adapter
A Simple Hold-down Device
Chuck Key Retainer
Machining Your Own Spur Gears
Faceplates and Such
Boring, Fly cutting & Spot Facing with Rotating Cutters

Lathe Accessories

Lathe Milling Attachment
Micrometer Dial for the Tailstock
Radius Turning Attachment
A Simple Die Filer
Improvements for the Atlas 6" Lathe
Four-Jaw Independent Lathe Chuck
Milling Attachment for the Lathe
Swarf Trays for the Myford Series 7 Lathes
A Tool post Grinder for Your Machinex 5 or Unimat Lathe
Step Collets
A Lathe Carriage Stop With Dial Indicator
A Compound and Ram Tailstock
A Simple Lathe Dog
A Taper Attachment for Your Machinex 5 Lathe
An Accessory Table for Your Lathe

Drill Press Accessories

Sensitive Drilling Attachment
Quick-Adjust Depth Stop
Drill Press Table
A Drill Press Improvement
Build a Precise Topper
Tool-less Hold-down Bolt

Shop Tools and Improvements

Building Your Own Dividing Attachment
No Bounce Soft Hammers
Two Machine Tool Stands
Micrometer Stand
A 20-Ton Hydraulic Press You Can Build
A Drafting Table You Can Build for Less Than \$20
Boring Head
Test Indicator
Molded Tool Storage Units
Inexpensive Fitted Instrument Case

Hobby Projects

A Modified "Wedge" Oscillating Engine
A Pocket Size Camera Tripod

The Stirling Hot Air Engine

THE GUNSMITH MACHINIST

By Steve Acker

Aligning Scope Mounts
A Travel Measurement Plate
A Barrel Bushing Jig
Installing Sight Beads
Cutting a Rifle Crown
Enlarging the Ejection Port
A Fixture for Milling the Recoil Lug
Hammer Work
Making a Dovetail Front Sight
Sight Holding Fixtures
A Gunsmith's Lathe Helper
Installing a Front Sight
Making Rifle Bedding Pillars
Milling Grasping Grooves
Moving a Firing Pin Hole
Trigger Job Pins
A Barrel Vise
Centering a Barrel Bore
Chambering a Rifle Barrel
Cutting Rifle Barrel Threads
Drilling and Tapping for Scope Mounts
Finding and Making Gun Parts
Installing a Locking Base Pin
Optimizing Revolver Throats
A Rear Sight Shifter
Replacing an Integral Front Sight
Stronger Scope Installation
An Unusual Scope Mount
Installing a Screw-in Choke Adapter
Removing a Broken Screw
Installing a Pre-threaded Short Chambered Rifle Barrel
A Post-ban AR-15 Muzzle Brake

Other Gunsmith Topics

Hot Bluing Steel
Building a Target Rifle

General Machining Topics

Checkering in the Mill
Steve Makes a Mistake
Handy File Cleaner

Making Pin Punches
Cutting Steel with a Circular Saw Blade
A Simple Phase Converter
Upgrading to Variable Speed DC
Making and Using a Bench Block
Tap Wrenches from Scrap
The Mirror-faced Hammer
A Mill-drill Repair
A 5C Collet Fixture Tailstock
Machining an Angle Plate
A Welding Tip
Making a Hardened Steel Washer
Personal Safety and Machine Grounding
A Low-cost Bead Blaster
A Wooden Work Support in the Mill
Building a Hydraulic Press Twice
A Knife Blade from Scrap
Welding up a Meat Smoker

PROJECTS ONE

Techniques

Milling on a Drill Press
Conserving Cutting Oil
Modifications to the Machinex 5 Lathe
Finishing Contoured Metal Castings
Sharpening Milling Cutters
A V-block Drill Guide
Handling Large Bore Tubing
Simple Chucks to Protect Finished
Versatile Fastener
Improving Your Lathe with a Dial Indicator
A Built-in Drill Guide
Balls and Bull Noses
Practical Design hints-Machining
Practical Design hints-Assembly
How to Get Things in Line Again
Drill Chuck Adapter
A Simple Holddown Device
Chuck Key Retainer
Machining Your Own Spur Gears
Faceplates and Such
Boring, Flycutting & Spot Facing
with Rotating Cutters

Lathe Accessories

Lathe Milling Attachment

Micrometer Dial for the Tailstock
Radius Turning Attachment
A Simple Die Filer
Improvements for the Atlas 6" Lathe
Four-Jaw Independent Lathe Chuck
Milling Attachment for the Lathe
Swarf Trays for the Myford Series 7 Lathes
A Toolpost Grinder for Your Machinex 5 or Unimat Lathe
Step Collets
A Lathe Carriage Stop With Dial Indicator
A Compound and Ram Tailstock
A Simple Lathe Dog
A Taper Attachment for Your Machinex 5 Lathe
An Accessory Table for Your Lathe

Drill Press Accessories

Sensitive Drilling Attachment
Quick-Adjust Depth Stop
Drill Press Table
A Drill Press Improvement
Build a Precise Topper
Tool-less Holddown Bolt

Shop Tools & Improvements

Building Your Own Dividing Attachment
No Bounce Soft Hammers
Two Machine Tool Stands
Micrometer Stand
A 20-Ton Hydraulic Press You Can Build
A Drafting Table You Can Build for Less Than \$20
Boring Head
Test Indicator
Molded Tool Storage Units
Inexpensive Fitted Instrument Case

Hobby Projects

A Modified "Wedge" Oscillating Engine
A Pocket Size Camera Tripod
The Stirling Hot Air Engine

PROJECTS TWO

Techniques

Reconditioning a Lathe
Rapid Machine Tapping Drill Press
Machining Thin Disks and Rings
Swaging Down a Copper Pipe Elbow
Some Pointers on Rotary Table Work
Making the Home Shop Pay
Keeping the Universal Chuck Accurate

Fear Neither Sphere Nor Hemisphere
Turning Ornamental Shapes
Measuring Pitch Diameter
Square References, Their Design, Construction and Inspiration
Solving a Weighty Problem
Getting the Most from Your Center Gage
and Other Threading Gages
A Cutting Tool for Machining Aluminum

Lathe Accessories

Temporary Self-locking Stub Mandrel
A Toolpost Grinder
Tailstock Die Holder
Lathe Chip Shield
A Large Steady Rest from the Scrap Pile
A Milling Machine for Your Lathe
Center Test Indicator
A Drill Holder for Your Lathe
Modifications to a Maximal V-8 Lathe
Construction & Use of the Lathe Carriage Stop
A Toolpost Problem Solver
Micrometer Attachment for Lathe Lead Screws
Double the Capacity of Your Lathe
Lathe Carriage Oiler
Build Your Own Faceplate
Spindle Stop for a 10-K

Drill Press Accessories

A Drill Press Tapping Tool
Column Storage Box for a Drill Press
Five-layer "Lazy Susan" Drill Index
Spacing Drill Guide Makes It Easy
V-Blocks Quickly Made

Milling Accessories

Rotary Milling Table
Milling Machine Chip Shield
Making an Automatic Feed for a Milling Machine
Clamping Work to the Mill Table

Shop Tools & Improvements

Conversion of a Gear-driven Shaper to Hydraulic Drive
An Automatic Parallel
Grinding Wheel Arbor
Oxy-fuel Cutting Guide Jig
A Temporary Aluminum Fence
A Steel Beam Trammel
End Mill Sharpening Fixture
Setting Up a Home Foundry
Metal Forming Brake Attachment

“Slow Poke” Small Keyway Broach
Toolholder Retainer
Toolmaker’s Clamp
Adjustable Parallels
Some Light on the Subject
Drawing up a Bargain
Sliding Band Saw Vise
Building a Portable Vise Bench
Screwdriver Blade Grinding Jig

Hobby Projects

A Firing Model Napoleon Field Gun
Build an Electric Gun
Build a Gimbaled Ship's Lamp

PROJECTS THREE

Techniques

How to Deal With Cranks and Eccentrics
Of Auctions and Industrial Sales
Helical Springs
Some Electric Motor Troubles
Watch Repair in the Home Machine Shop
Freehand Twist Drill Sharpening
The Extremes of Space
Measurements for Taper Turning
Sharpening Small Drills
The Selection, Connection, Reversing and
Repair of Electric Motors
Cellulose Tape - Silent Magic
Quick Threading & Tapping in the Lathe
Indexing on Small Lathes
More Reconditioning a Lathe
Some Facts on Dial Indicators
Shrink and Expansion Fits
Facing Thin Pieces
Jaws
Broaching with your Lathe
Updating Flat Belt Driven Equipment
Cutting Bastard Threads on a Quick-change Lathe
Cutting a Thin Gear
Screw cutting Threads
The Art of Soldering

Lathe Accessories

Improved Atlas 6" Lathe Gear Cover
Make your own Centering Guide
Eliminate Headache Potential

Collets for Your Lathe
A Spindle Work Stop
Machining Aids for a Machine Lathe
Lathe Chuck Backstop
Wiggler Bar and Test Bar
Using Unimat SL Chucks and Collets
Multi-Purpose Block
Making an Angle Plate in the Lathe
Spindle Nose Collet Chuck for the 6" Atlas Lathe
Radius Turning Tool
From My Shop to Yours
An Accurate Taper Attachment for Under \$500
Threading Dial Indicator for the Lathe
A Multiple Tool Post for 6" Lathes
A Lathe Thread Cutting Stop
Adjustable Traveling Dial Indicator Rod
A Lathe Tool Setup Gage
A Chuckboard

Milling Accessories

The Installation of a ShopTronics
Milling Machine DRO
Tooling for Unimat-type Drilling Milling Machines
A Power Quill Feed Attachment for Milling Machines 10" "Super Colossal" Fly Cutter
Extend the Capacity of Your Milling Machine

Drill Press Accessories

A Slow Speed Drill Press Attachment
Drilling Accurate Holes

Shop Tools and Improvements

A Twin-beam Trammel
A Vise for Small Parts
A Small Demagnetizer/Magnetizer
Table Covers and Tool Trays
Simple Centering Gage
Scroll Saw
A Cutter Bit Grinding Block
A Make-do Vernier Height Gage
A Rotary Welding Table
Parts Cleaner
Drop Cord Caddy
Build a Cutter Bit Grinding Block
Brass is Beautiful
40-Ton Hydraulic Arbor Press

Hobby Projects

A Machinist's Desk Lamp

PROJECTS FOUR

Techniques

- Renewing Half Nuts
- Lathe Cutting Internal Keyways
- Otis Makes an Accurate Final Cut
- The Color of Steel
- Osborne's Four Steps to Center
- Two Steps to Center
- Machine Cutting Speeds
- Single Point Cutting of Coarse Internal Threads
- Two-Sphere Gage for Measuring Root and Pitch Diameters
- Drilling Steam Passages and Tangents
- Gear Driven Shapers
- Using Carbide Turning Tools
- Grinding and Lapping with Diamond
- Economical Large Hole Drilling
- Gear Repair
- Buying Used Machine Tools
- A Special Breed
- Diamond Tool Efficiency
- Reducing Tap Breakage
- The Surface Grinder
- Using a Vertical Band Saw

Lathe Accessories

- Carriage Multi-Spot
- A Lathe Cabinet/Stand
- Boring Bar and Toolholder for Compact 5
- Tooling for the Micro Machinist
- \$100 Digital Readout
- Converting a Lathe to Cut Metric Threads
- A Center-mounted Drill
- Lathe Carriage Dial Indicator
- An Assist from the Forge
- Compound Rest Lock
- Making the Lathe Safer
- A Feed Lever for a 10-K
- Two Accessories for the Atlas 12" Lathe
- A New Cutoff Tool

Drill Press Accessories

- Small Hole Saws
- One-evening Projects

Milling Machine Accessories

- Tool Plate
- Mufti-Stand
- Accurate Quill Depth Control for Mill/Drills
- A Mill-Drill Stand

Shop Improvement Projects

A Sensitive Level
A Plastic Dip Pot
Cutting Torch Contour Guide
Handy Deburring Tool

Foundry

Investment Casting
Patterns and Molding Procedure
A Small Melt Furnace
Making Identical Patterns for Multiple
Lost Wax Castings
Home Shop Metal Melter

Hobby Projects

A Brass Kaleidoscope
Sentinel
Auxiliary Outboard Motor Bracket

PROJECTS FIVE

Techniques

Lathe Operations on a Vertical Mill
Poshin' Up a Taiwanese Lathe
Remounting a Four-jaw Chuck
Electric Discharge Machining (EDM)
Stainless Steel Fundamentals
Heat Treating Basics
On Preventing Bloodshed
Otis Stops the Chatter
Cast Iron Repair
Confessions of a Junkyard Motor Junkie
Otis Measures Across Backlash
Low Range Ohmmeters for Electric Motors
A Blacksmith Extraordinaire
Drilling Multiple Holes in Line
Teeth for Rotary Cutting Tools
Dial Indicators- Dial Test Indicators
Density, Volume, Dimensions = Weight

Lathe Accessories

A Larger Steady Rest
Out-of-the-Way Storage Where You Need It
Lathe Carriage Stop
A Useful Follower Rest
A Fixture Plate for Lathe or Mill
Topics in Micromachining
Rule Guide for Easier Layout

Milling Machine Accessories

Accessories for a Rotary Table
Soft Vise Jaws

An Indexing Device
The Rotary, Dual Cross-slide Drill Press and Milling Machine Table
Table Square
A Mill/Drill Stand
A Tapping Guide for a Unimat
Small T-slot Nuts
Surface Grinding on the Drill Press
Keeper of the Key

Shop Improvement Accessories

Making and Using a Bench Block
Band Saw Transmission
Flame Cutter
A Pulley Puller
A Simple Phase Converter
Building the Universal Pillartool
A Hand-operated Plastic Injection Molding Machine
A Mirror-faced Hammer

Hobby Projects

An Easily Built Free Pendulum Clock
Toggle-link Operated Can Crusher

PROJECTS SIX

Techniques

Turning Short Tapers on a Mill
Checkering in the Mill
Cutting Irregularly Shaped Holes
Basement Rust
Ball Turning on the Mill
Steven Makes a Mistake
Starting Turning
Cerro Alloys Aid in Machining Irregular Parts
On the Use of Threading Dials for Cutting Metric Threads
Knurls and Knurling
Removing Broken Screws and Studs
Cutting V-notches
Skipping
Aluminum Fundamentals
Thoughts on Selecting Vertical Mills
Vacuum Up Those Chips!
Taper Turning

Drill Press Accessories

Drill Press Vise restraints
Drill Press Quill Lock

Lathe Accessories

A Thread Tooling System and Wiggler for the Lathe
A Deluxe Radius Turning Attachment

A Quick-change Tool Post System
A Saw Blade Cutoff Tool
An Improved Lathe Drive
Lead Shot Filled Boring Bar
Knockout Bar
A Thread-cutting Aid
Threaded Bushing

Milling Machine Accessories

A Simple Indexing Rotary Table
Alternate Clamping Devices
An Inexpensive Power Feed
A Spindle Lock for Your Mill/drill
A Milling Machine Conversion
Another Fly Cutter
Adapter for a Boring Head
Toolmaker's Button

Shop Improvement Projects

Building a Hydraulic Press Twice
Mobilize Your Heavy Shop Tools
The Grizzly 8 x 18" Lathe
Making Pin Punches
A Wood Carving Machine
Indexing Template for Easier Layout
A Homemade Electric Motor Mount
A Simple Grinder Water Pot

Hobby Projects

On Improving the Image

PROJECTS SEVEN

Techniques

Balancing a Grinding Wheel
Clamping Tapered Material in a Vise-No Problem!
Large Radius Cylindrical Cuts on a Shaper
Scroll Sawing
Facing to Accurate Length
Turning Short Tapers on a Mill/Drill
Reviving a Lunch Break Shaper
Dividing on the Lathe
Heat-treatment Processes for Engine Components
Starting Turning
Hot Bluing Steel
Stuck Chucks One-more-time, Didactic #17
The Proper Use of Diamond Dressers
Cutting Steel with a Circular Saw Blade
Building Phil Duclos' Model Maker's Dividing Head
Lathe Tips

Using the Diamond Toolholder
The How and Why of Tangential Cutting
Engineering Plastics
Sharpening Tungsten Carbide Drills
The Rebirth of a Model C South Bend Lathe

Lathe Accessories

A Unimat Headstock Adapter
A Quick Tumbler Gear Reversal Mechanism
Internal Spindle Stop
Get a Handle on Your Lathe
Tap Dogs
Atlas Tailstock Modification
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Milling and Drilling Machine Accessories

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A Mill/drill Support
Chatterless Countersinks
Mill Spindle Indicator Holder

Shop Improvement Projects

Variable Speed DC Motor for the Home Shop
Supplement to the Home Shop Motor Controller
A Modified Arbor Press Ram
Low-cost Reversing Switch for Electric Motors
A Machinists Clock
More on EDM
A Simple Timer
A Sliding Bevel Gage with Protractor
A Small Shop Butt Welder
A Homemade Die Filer
An Indicator Stand
More on Three-phase Converters

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Building the Titan 60
The Walking Staff
A Steam/Air Engine for Fun
Cylinders and Pistons

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Computers in the Shop
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Convert a Milling Machine to CNC
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Another Mill-Drill Adventure
You Can Do It
Modify Your Bead Blast Gun
Screw Heads and Screwdrivers
Using a Computer to Draw Scales
The Old Compound Indexing Table Reworked
Basic Industrial Electrical Control
Troubleshooting Primary Reasons for Scrap
Grinding Tool Bits for a Smooth Cut
Pulley Arrangement vs. Spindle Speed
You Can Find It
Improve Your Lathe Drawbar
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A Tale of a Jet GHB Gap Bed Lathe
Cutting a Non-standard Radius on a Milling Machine
Laser Alignment for the Home Shop
Metric Threads from Your English Lathe

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Adjustable Lathe Stop for Under \$15
Two-speed Belt Transmission
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E-Z Bore
Headstock Angle Adjuster for the Sherline 4000 lathe
A Faceplate Toolholder
A Grease Adapter for the South Bend

Milling and Drilling Machine Accessories

A Fine Feed Attachment for a Vertical Mill
Mill-Drill Spindle Lock
The Universal Plain Dividing Head
A Mill-drill Modification
A Mechanical Lift for a Drill Press Table

Shop Improvement Projects

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Additions to the Quorn Tool and Cutter Grinder
The Brass Pad
A "Very Much Improved" Quorn Tool and Cutter Grinder
Piloted Tap Guide Wrench
PC Board Vise
Vertical Discharge: Everybody Needs VD
A Useful, High-quality Magnifying Glass
Quick Graduated Collars
Grizzly 8" Table Indexing Plates Summary

Thin Sheet Filing Fixture
Zinc Aluminum Alloy Sleeve Bearings for a Dividing Head Upgrade
Magnetic Mandrel
Improving a Chinese-born Lathe
Band Saw Fixture

Hobby Projects

Telegraph Key
A Test-tube Stirling Engine

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The lathe Thread-chasing Dial – Lathes with Inch-thread Screws
Atlas/Craftsman Slide Stop
Sharpen those Drill Bits
Projects without Drawings
Small Precision Balls
Ball Turning
Parting Toolholder
How Many Turns? How Many Holes?

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5C Collet Closer
Morse Taper Work Arbors for an Oversized Project
Additions and Modifications to the Sakai ML-360 Lathe

Milling and Drilling Machine Accessories

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Upgrading an Old Bridgeport
A Fixture for Thin Stuff
The Real Spindle Lock
Toolmakers' Buttons Generate Precision Holes

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The Phoenix Horizontal Milling and Boring Machine
Tilt Body Indexer
Build an Air Compressor
Another Edge Finder
The Poor Man's T-slot Rotary Table
A Dremel Drill Attachment
A Homemade Magnetizer-Demagnetizer
Band Saw Modifications
Turning a Thin Wall in Teflon
Improving a Chinese-born Lathe
The Art of Recycling

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Free Pendulum Clock
A Poor Man's Level

Driving the Stirling-powered Tractor

PROJECTS TEN

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Casting Iron in the Home Foundry
Making Small Pistons and Rings
Getting Started in Metal Spinning
Metric Equivalent Drills
Larger Spherical Radii
Linux in the Home Workshop
Like a Bridge over Troublesome Shapes
A Collet Reference
Precision Boring
Welding Electrodes for the Home Shop Machinist
Gear Repair by Bronze Surfacing
Removing Backlash with a Left-hand Tap
Solving the Three-phase Problem with a VFD
Moving a Rong-Fu Mill-Drill

Lathe Accessories

Scroll Chucks – Their Care and Repair
Overhauling a Jacobs Chuck
Modified Chuck Key
Americanizing a Falcon Lathe
Chuck Mounting Plate
Upgrading a Cintilathe Dial
Way Too Fast!
Make Your Own 3C and 6K Collets
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Overhauling the “Old Lady”
Buffers Etcetera
Toolholder Extension

Milling and Drilling Machine Accessories

A Locating Stop for the Milling Vise
Setting Up Fly-cutter Bits
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Dual-action Fly Cutter
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Shop Improvement Projects

A Modified Base for a Band Saw
Angle Makes All the Difference
Angle Measurement with an Adjustable Square
Induction Motors and Rotary Phase Converters
Vane Pump
Hand-held Dial Indicator Tester
Make Your Own Socket Head Fasteners with the Brinkerhoff Rotary Broach

A Miniature Collet Driver – Learning Experiences in Concentricity
Building an MLA Filing Machine
Inexpensive Sand-blasting Cabinet

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Building a Miniature Church

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The Continental A-40 Aircraft Engine
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Functional Metal Enclosures
A Different Approach to Small Flywheel Machining
Thread Substitutions
Heat-Treating Steel
Easy Threading Tool Sharpener
Repair Backlash With Moglice
Getting Started In Welding Plastics
Moving an Enco RF-30 Mill-Drill...Twice
Model Ignition Systems - How Much Voltage is Required?
Score in Your Shop with a Hockey Puck
Make Mild Steel Behave Like High-carbon Steel
All Wound Up About Springs

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Disk-Cutting Fixtures for the Lathe
Sharpening HSS Lathe Tool Bits
Transplant a Compound Gear Assembly
A Simple Turret for the Atlas/Craftsman 12" Lathe
Telescopic Taper Attachment for South Bend 9" or 10" Lathes
Make a Saddle/Carriage Clamp Lock
A Thread Cutting Stop for South Bend Lathes
A Rotating Lathe Tailstock Chuck
Machining the M.L.A. Collet Chuck Kit

Milling and Drilling Machine Accessories

An Excellent, Affordable Drill Bit Sharpener
Indexable Carbide Insert End Mill
Experimenting with Fly Cutters
Milling Vise Alignment
A Universal Motor Controller

Shop Improvement Projects

Repairing "Old Iron"

Swivel Blocks
Finish That Micrometer Box
A Handy Material Storage Rack
Make a Hub Wrench
Hang That File
Converting a Woodcutting Band Saw to Cut Metal
Small Parts Holder for Silver Soldering
Build a 50/30 Ton H-Frame Hydraulic Floor Press
Granite Surface Plates
Building a Model Engine Camshaft Grinder

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The Vandy Electric Scooter
Radial Electric Motor

Quest for Mastery

Titanium - a Metal for the Space Age

THE SHOP WISDOM OF FRANK MCLEAN

Techniques

Planning a Small Shop
Drilling and Tapping Hints
To Find the Tap Drill Size
Drilling Center Holes Accurately
How to Drill the Center Holes in a Shaft Accurately
A Few Tips on Drilling on a Drill Press or a Vertical Milling Machine
Chain Drilling Locomotive Frames
Using Your Drill Grinding Attachment
A Few Thoughts on Drill Presses and Tool Grinders
A Fireside Chat about Lathes
Centering Small Square Stock
A Fire Side Chat about Lathe Chucks
A Fire Side Chat about Lathe Tools
Leveling the Bench Lathe
Tips on Turning Between Centers
Turning Tapers
How to Align the Tailstock Easily
Repairing an Old Lathe
How to Replace to Damaged Thread on a Drawbar
Boring Internal Threads
External Threads
Simple Pulley Calculations
Pulley Ratio and Cutting Speed Problems
Compound Pulley Ratios
Choosing the Correct Speed
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Compound Gear Ratios
Tapping Large Pulleys
Replacing Broken Gear Teeth
A Few Tips on Knurling
Milling on the Lathe
A New Vertical Milling Machine
Improving Your Vertical Mill
Tips for Silver Soldering
Installing a Power Feed Unit on a Vertical Mill
Milling Keyways
Cutting Left-hand Threads
Protecting Your Mill from Shavings
Machining Thin Plates on a Vertical Mill
Finishing Plate Ends
Bronze Bushings and Oilite Bearings
How to Make a Layout with a Vernier Height Gage
Sharpening Two-lip End Mills
Sharpening Taps and Dies
How to Install and Remove Ball Bearings
Improving a Milling Machine Vise
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Homemade Drills
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Lathe Accessories

Lathe Stands
Lathe Accessories
Lathe End Mill Adapters
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Roller Tool for the Lathe
A Wiggler

Milling Machine Accessories

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A Finger Stop for the Vertical Milling Machine Vise
Lighting Your Vertical Mill
A Micrometer Stop Nut
The Humble Angle Plate
A New Rotary Table
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A Hollow Mill
A Carbide End Mill
Fly Cutters and Arbors
Expansion Link Milling Fixture
Machinist's Screw Jacks
A Shell End Mill Arbor

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A Sturdy Workbench
How to Make a Special Tap
Transfer Screws
A Power Hacksaw
Power Hacksaw Table
A Simple Rail Bender
A Grinding Bench
Rivet and Screw Cutters
An Improved Parallel Clamp
A Plain Surface Gage
An Easy-to-Make Vernier Height Gage
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A Universal Surface Gage
A Chip Catcher for the Shaper
A Depth Gage Attachment
A Toolmaker's Flat Vise
A Small Machine Vise
A Band Saw Slow Speed Attachment
A New Centering Gage

THE SHOP WISDOM OF PHILIP DUCLOS

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"Floating" End Mill Sharpener
Unorthodox Mill/Lathe Grinder
Old Lathe Collet Adapters
Slow Poke Small Keyway Broach
Temporary Self-locking Stub Mandrel
Adjustable Parallels
A Temporary Aluminum Furnace
Degassing Molten Aluminum
10" Super Colossal Fly Cutter
A Showpiece Challenge
Give Metal Spinning a Whirl

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Smallest "Hit & Miss" Gas Engine?
Model Piston Rings
Curved Spoke Flywheel
"Whatzit" Engine
Six-cycle Oddball Engine
A Huff 'n' Puff Engine
Fire Engine

THE SHOP WISDOM OF D.E. JOHNSON

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Reducing Tap Breakage
Multi-Purpose Block
Machining Thin Disks and Rings
Construction and Use of the Lathe Carriage Stop
A Thread Tooling System and Wiggler for the Lathe
Serious Milling with the Lathe
Rapid Production of Dividing Head Index Plates
A Rolling Tailstock Arbor
Taper Shank Turning Made Easy
A High Efficiency Screw Press
A Universal Belt Tensioner
A Classic Boring Bar Holder
Micro Aids for a Full-Size Machinist
A Drill Press Speed Reducer
A Universal Cross Drilling Fixture
Anti-Rotation Drill Holder for the Lathe Tailstock
Making Chatterless Countersinks
Instant Soft Jaws for the Vise
A Quick-Acting Universal Lathe Mandrel
A Lathe Tool Post Grinder for Serious Grinding
A 5C Collet Adapter for the Lathe

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Picking it Out
Fixing up the Downfeed
Spindle Lock and Tap Starter
Tooling Plates
A Power Feed for the Main Table and a Rotary Table
Powering the MK-4
Keeping Track of the Cutting Tool and Table Positions
New Handwheels and Lead screw Bearings Fix Backlash and Rattles
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Roll Forming Copper Boiler Heads and Similar Parts
An Automatic Electric Model Boiler
A Simplified Utility Hand Pump

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Building the Edge Master Lawn Machine

THE SHOP WISDOM OF JESSE LIVINGSTON

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Slide Valve Oscillating Engine
Rocking Valve Mill Engine
Bernays Engine

Scale Locomotive Projects

Filer and Stowell Logging Locomotive
The Newbie Project

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Increasing Boiler Efficiency
Feedwater Heater
Beautify that Pressure Gauge
Nipple Chucks
Metal Casting and Foundry Work
Scaling Plans from Photos
An Introduction to Metal Casting and Foundry Work
Flue Roller
Equipment Lettering
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THE SHOP WISDOM OF JAMES MCKNIGHT

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Oscillating Edge Belt/Spindle Sander
Three-Axis Wood Mill
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Automatic Vent Door
Index Angle Plate
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Precision Grinding Fixture for Tool Bits
Sine Plate
V-Block/Center Drilling Fixture
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Miniature Height Gage
Quick-adjusting Boring Head

THE SHOP WISDOM OF RUDY KOUHOUP

The Micro Machinist

Machine Shop in a Cabinet
Test Indicator
Compressed Air Motor
Boring Bars
Milling Accessories
Stocking Stuffers
Use of Dimensions
Slitting Saws
Fixed Steady Rest
Small Keyways and Keyseats
Building a Rotary Table
Fly Cutter and Angle Plate
Micrometer Faceplate Attachment
Time for an Overhaul
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Building Your Own Dividing Attachment
Milling on a Drill Press
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A Horizontal Stationary Engine Project
An Overcrank Engine
Baker Fan
Build a Reversing Upright Engine
A Fore and Aft Compound

THE SHOP WISDOM OF RUDY KOUHOUP T Vol. 2

The Micro Machinist

Tooling for a Vertical Mill
Making Tap and Reamer Handles
Tool Post Boring Bars, Cutters, and Turning Tools
Making a Pair of Milling Clamps
Making a Catch Plate
A Grinding Rest for Precise Tools
Sharpen Your End Mills,
Building a Mufti Cutter Face Mill
Making a Cutoff Toolholder
Using a Cutoff Tool
Drill Press Chuck Handles
Turning a Morse Taper
A Lame Table
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Two Useful Milling Accessories

Two Useful Lathe Dogs
Checking Lathe Alignment
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Make an Open-sided Tool Post
X and Y Stops for the Mill
A Compact Boring Head
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An Accurate Vise for the Milling Machine
Building Your Own Engraving Pantograph
Thread Cutting on the Lathe

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A Not-so-simple Oscillating Cylinder Engine
An Air-cooled Hot Air Engine
Building a 1" Scale Bobber
Running on Air

THE SHOP WISDOM OF RUDY KOUHOUP T Vol. 3

The Micro Machinist

A Lathe Milling Adaptation
A Grinding Rest for Precise Tools
A Holder for 13/16" Dies
Setting Up Shop
Tiny Engines
Make Your Own Lathe Collets
Mounting Small Chucks and Faceplates
Reconditioning an Atlas Milling Machine
Making Accurate Squares
Making an Angle Plate
Build and Use an Adjustable Angle Plate
Making a Clapper
Indexing Centers
A Mechanical Revolutions Counter
Carriage Stops
Cross-Slide Stops
Make a Magnetic Lathe Chuck
A Mechanical Stroboscope
A Balanced Knurling Tool

Other Features

Using the Diamond Toolholder
A Mobile Lathe Stand

Hobby Projects

Build a Little Workhorse Engine

Something Old, Something New
Build a Flywheel Pump
A Stirling Powered Tractor
Little Job Cement Mixer

THE SHOP WISDOM OF RUDY KOUHOUP Vol. 4

The Micro Machinist's Legacy

A Compact, Double-action Indicator
An Atlas Mill Update
Build a Quick-change Toolholder
It Never Fails! – Raising the Lathe Axis
Build the Radial Five
Make a Holiday Nutcracker
The Micro Machinist's Legacy

TWO SHOP MASTERS: FRANK MCLEAN AND PHILIP DUCLOS

The Tool Legacy of Frank McLean

A Time for Reflection
A Few Tips for Beginners
A Miniature Four-tool Turret
Tapered Reamers
Threading to a Shoulder
Cutting Left-hand Threads
A Shell End Mill Arbor
Improving a Milling Machine Vise
A New Centering Gage
A Tool post Grinder
A Bell Chuck for Your Lathe
Improving the Collet Draw Tube
A Cylinder or Master Square
Fitting Small Drill Chucks
An Unusual Lathe Dog
Making a Knurled Head Thumbscrew
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Correcting a Milling Machine vise
Hinge Centering Punch
Rounding the Ends
Tailstock Attachments for the Lathe
Brazing Band Saw Blades
Improving the Horizontal/Vertical Band Saw
An Unusual Turning Operation
Cloche Hops
Hand Turning on the Lathe
Homemade Counterbores
Small Drill Sharpening Guides
Horizontal Milling Attachment

Keyway Broach Bushings
Using a Router on the Vertical Milling Machine
How to Make a Chuck Backplate
A Spur Center for Turning Wood
Cleaning a Universal Chuck
How to Set Up and Use a Drill Grinding Attachment
Milling a Keyseat in a Shaft
A Few Thoughts on Shapers
A Taig Lathe Tool Rest
How to Make a Tapered End Mill
Tool Rests for Turning Wood
An Elevated or Auxiliary Lathe Spindle

The Engine Legacy of Philip Duclos

Little “Blazer” Engine
“Hula-Hula” Engine
Topsy-Turvy Engine
Gearless Hit ‘n Miss Engine
Maverick Engine
A “Victorian” Engine

THE GUNSMITH MACHINIST – STEVE ACKER

The Gunsmith Machinist

Aligning Scope Mounts
A Travel Measurement Plate
A Barrel Bushing Jig
Installing Sight Beads
Cutting a Rifle Crown
Enlarging the Ejection Port
A Fixture for Milling the Recoil Lug
Hammer Work
Making a Dovetail Front Sight
Sight Holding Fixtures
A Gunsmith’s Lathe Helper
Installing a Front Sight
Making Rifle Bedding Pillars
Milling Grasping Grooves
Moving a Firing Pin Hole
Trigger Job Pins
A Barrel Vise
Centering a Barrel Bore
Chambering a Rifle Barrel
Cutting Rifle Barrel Threads
Drilling and Tapping for Scope Mounts
Finding and Making Gun Parts
Installing a Locking Base Pin
Optimizing Revolver Throats

A Rear Sight Shifter
Replacing an Integral Front Sight
Stronger Scope Installation
An Unusual Scope Mount
Installing a Screw-in Choke Adapter
Removing a Broken Screw
Installing a Pre-threaded Short Chambered Rifle Barrel
A Post-ban AR-15 Muzzle Brake

Other Gunsmith Topics

Hot Bluing Steel
Building a Target Rifle

General Machining Topics

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Steve Makes a Mistake
Handy File Cleaner
Making Pin Punches
Cutting Steel with a Circular Saw Blade
A Simple Phase Converter
Upgrading to Variable Speed DC
Making and Using a Bench Block
Tap Wrenches from Scrap
The Mirror-faced Hammer
A Mill-drill Repair
A 5C Collet Fixture Tailstock
Machining an Angle Plate
A Welding Tip
Making a Hardened Steel Washer
Personal Safety and Machine Grounding
A Low-cost Bead Blaster
A Wooden Work Support in the Mill
Building a Hydraulic Press Twice
A Knife Blade from Scrap
Welding up a Meat Smoker

THE GUNSMITH MACHINIST – BOOK TWO

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An M-14 Front Site for the Mauser
Using a Reveiver Contouring Fixture
Making a Ruger Scope Ring Base
Repairing a Scope Base Mounting Hole
Rebarreling an M-1 Garand
Installing a Muzzle Break
Adjusting Firing Pin Protusion
A Side Safety for the Mauser Rifle
Lengthening a Winchester 97 Chamber

Jewelling a Rifle Bolt
Centering an AR-15 Front Site
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Pistol Projects

Line Boring a Ruger to .45 Colt
Using a Grip Safety Fixture
Machining a Frame for a Ramped Barrel
Repairing a Feed Ramp
Improving a Pistol Grip
Installing a Low Mount *BO-MAR* Sight
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Repairing a Tokarev Safety
Relining a Ruger Pistol
Tightening a Ruger Mark I Frame
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More Uses for *Cerrosafe*
Headspace and headspace Gages
Tapping a Shallow Hole
Making a Cleaning Rod Muzzle Guide
Repairing a Stripped Grip Screw Hole
A Protective Center for a Rifle Barrel

Machine Shop Aids

Reworking the New *Multi-Vise*
A Gunsmith's Grinder Bit Handles
Cutting a Gun Screw to Length
Lathe Cutting Threads on Blank Screws
A Cartridge-Specific Powder Funnel Adapter
Making a Small Screwdriver Bit
The Micrometer Adjustable Reamer Shop
Repairing a Dunmore No. 5 Motor
Shop Knives from Files
Machining a Cast Iron Faceplate

STEAM & STIRLING BOOK ONE

Stationary Steam Plant
An Unusual Steam Engine
Half-Horse Marine Engine
A Brief Prelude-Moriya
A Steam Turbine
Hand-Tool Steam Engine
A Word About Metrics

Variations on a Theme
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Thimble Power Plant
Minikin
Opposed Piston Steam Engine
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STEAM & STIRLING BOOK TWO

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Root's Engine
"Hula-hula" Engine
A Simple Steam Engine
Simplex & Duplex
A Reversing Duplex
A Toy for Richard
An Original Mill Engine "Scrapbox"
A Three-cylinder Oscillating Steam Engine
Brasso-A Small Beam Engine
An Easy-to-build Speeder
A Speeder Update -An Alternative Engine
The Tesla Turbine
NDC-1
The Mystery Machine "Woody"
Duplex Pump
A Junkbox Steamroller

Sterling Hot Air Engines

Fire Eater Engine
Stirling Hot Air Engine
A Simple, Low-Cost Stirling Cycle Engine

Boiler Works

An Automatic Electric Model Boiler
Roll Forming Copper Boiler Heads

Related Topics

The use and Storage of Propane
Stirling Engine Work
Make a See-through Displacement Lubricator
Flywheel Tapered Bushing
Wood Flywheels
A Simple Alcohol Burner

STEAM & STIRLING BOOK THREE

Steam Engines

The First Steam Engine

A Simple Steam Turbine
A Three-stroke Steam Engine
A No-casting 1.5 x 1.5V Steam Engine
An 1871 Frisbie Toy Steam Engine
The Epicyclic Steam Engine
A Micro Steam Car
A Revolving Cylinder Engine
A Steam Engine with No Moving Parts
A Rotary Valve Beam Engine
The "Little Kathy" Engine
A Sternwheeler Engine
A Small Oscillator for Marine or Other Uses
Weeden Vertical Remembered
Square Cylinder Steam Engines
A Slide Valve Engine

Sterling Hot Air Engines

A Walking-beam Stirling-cycle Mill Engine
A Hot Air Stirling-cycle Engine
The Sidewinder Stirling-cycle Engine from Scrap
A Low Temperature Stirling Engine
Stirling
A Stirling Model Aircraft Engine
A Simple Hot Air Engine Burner

Boiler Works

Modifications to the Johnson Electric Boiler
Managing Corrosion in Steel Boilers
Tubing Boilers
A High Tech Flash Boiler
A Spider
Boiler Feedwater Treatment
Heat Flow in Live Steam Boilers

Related Topics

A Steam Pump Project But Not for Amateurs!
When Steam Does Not Come From Water
A Cylinder Lubricator
The Oakes Steam Valve Gear
A Steam Launch Operator's Manual

RUDY KOUHOUP PLAN SETS FROM THE PAST: MODEL STIRLING ENGINES

Stirling-cycle Hot Air Engine
Water-cooled Horizontal Stirling Engine
Water-cooled Vertical Hot Air Engine

RUDY KOUHOUP PLAN SETS FROM THE PAST: WORKING STEAM ENGINES

Walking Beam Engine
Model Marine Engine

Open Column Steam Engine
Model Mill Engine
Enclosed Crank Steam Engine
Model Horizontal Steam Engine

RUDY KOUHOPT PLAN SETS FROM THE PAST: FUN WITH ENGINES AND OTHER THINGS

Three-cylinder Radial Engine
Piston Valve Steam Engine
Model Vertical Steam Engine
Building a Small Steam Engine
Compressed-Air V-4 Engine
Revolutionary War Cannon

RUDY'S MODEL STEAM TRACTOR

Rudy's Model Steam Tractor

Rear Wheel Assembly
Front Wheel Assembly
Flywheel
Shafts and Axles
Frame and Boiler Casing
Front Axle Fork and Perch Bracket
Rear Components
Power Transmission Through the Gear Train
Steering
Boiler Casing Details
Machining the Cylinder and Associated Components
Imparting Motion to the Valve
Cylinder Attachments
Throttle
Inside the Firebox and Boiler
The Final Touches

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List of Materials and Gears

Detail Drawings

TESLA TURBINE AND OTHER ENGINES FROM JEFF MAIER

Tesla Turbine
Two-cylinder Uniflow Engine
Terry Turbine
Horizontal Uniflow Engine

SO YOU WANT TO BUILD A LIVE STEAM LOCOMOTIVE

Questions Commonly Asked the Live Steam Locomotive Builder
Overall Design

Tools Required to build a Live Steam Locomotive

Engineering Data

Shop Safety Precautions

Frames

Running Gear

Wheels, Tread, and Gauge

Journals and Journal Boxes

Cylinders and Their Moving Parts

Machining Steam Engine Piston Rings

Valve Gear

Brakes

A Simple Train Brake System

Smokebox

The Boiler: Safety First, Last, and Always

The Boiler: Features and Design

Miniature Boilers of Stainless Steel

Fabricating the Copper Boiler

The Smokebox Throttle

Feed Water System

Plumbing

Fuel and Combustion

The Case for Propane

Oil Firing Your Locomotive

The Tender

Tools, Methods, and Accessories

The Whistle

Metal Etchings

Operation

BUILDING THE SHAY

Building the Shay

Trucks

Square Shafts

Engine

Reversing Gear

Axle Pump

Lubricator

Main Frame

Boiler

Hand Pump

Boiler Fittings

Steam Dome

Safety Valve and Whistle

Boiler Jacket, Bell , and Sandbox

Fire Door, Grate, and Ashpan

Smoke Box

Headlight
Steam Piping
Cab
Water Tank
Water Feed Piping
Painting and Carrying Case
Operation and Maintenance
Appendix

BUILDING THE NEW SHAY

Building the New Shay – A 1920s Shay in 3/4” Scale

Frame
Trucks
Brakes
Lubricator
Axle Pump
Hand Pump
Boiler
Smokebox
Boiler Jackets
Fire Grate and Ashpan
Water Gauge, Pressure Gauge, and Fire Door
Cab
Throttle
Safety Valves
Steam Dome, Sandbox, and Handrail
Cylinders and Brackets
Crankshaft and Sleeve Couplings
Pistons and Connecting Rods
Valve Gear
Reverse Gear
Cylinder Cocks
Steam Piping
Oil Tubing
Whistle
Tank
Water Piping
Headlights
Dummy Parts
Carrying Case
Operation and Maintenance
Bill of Materials

A New Shay in 1-1/2” Scale

Safety of Copper Boilers

Safety Valves for Live Steam Boilers

Tube Joints

O-rings for Live Steam Service
Small Hexagonal Head Screws

BUILDING THE HEISLER

General Arrangement

Engine Assembly

A 3/4" Scale Heisler by Sylvio Boudreau

Trucks

A 3/4" Scale Heisler by Yukio Ishibashi
A 3/4" Scale Heisler by Gunnar Ohrstrom
A 3/4" Scale Heisler by Ken Evasew
A 3/4" Scale Heisler by C.F. "Fred" Palmer
A 3/4" Scale Heisler by Henry E. Washburn
A 3/4" Scale Heisler by Roy A. Carruthers

Axle Pump

A 3/4" Scale Heisler by John Tate

Lubricator

A 3/4" Scale Heisler by Carl Ware
A 3/4" Scale Heisler by James W. Field

Mainframes

A 3/4" Scale Heisler by Don McCormac

Center Shafts

Cylinder Cocks

Reverse Gear

Brake Gear

Hand Pump

A 1-1/2" Scale Heisler by Ken Lloyd

Boiler

Boiler Fittings

Boiler Jacket

Steam Dome and Sandbox

Fire Door, Grate, and Ashpan

Smokebox

A 1-1/2" Scale Heisler by Richard D. Lane

Steam and Oil Piping

Running Boards, Handrails, and Bell

Cab and Tank

Feedwater Piping

Painting and Carrying Case

Operation and Maintenance

Appendix

Larger Scale Heisler
You Can Build a Pressure Gauge
A 1-1/2" Scale Heisler by Paul C. Haar
An Introduction to Heisler Geared
Locomotives by James C. Mangels

Conversion Chart – Inch to MM
Metric Conversion

BUILDING THE CLIMAX

Introduction

Main Frame

A 3/4" Scale Heisler by Denis K. Laflamme

Wheels

Trucks

Line Shaft

Machining Gear Cutters

A 3/4" Scale Heisler by W.M. Shellshear

Machining Gear Teeth

Crankshaft Frame Fabrication

A 3/4" Scale Heisler by Phil Sims

Water Pump

Lubricator

Engine

Reverse Gear

A 1-1/2" Scale Heisler by Sumner Barber

Cylinder Cocks

A 1-1/2" Scale Heisler by Walter Bush

Hand Pump

Boiler

Fire Door, Ashpan, and Grate

A 3/4" Scale Heisler by Joseph Eastman

Smokebox

Steam Piping

Boiler Jackets, Handrails, and Bell

Steam Dome and Sandbox

Boiler Fittings

Running Boards

Cab

Water Tank

Water Piping

Painting & Carrying Case

Operation & Maintenance, First Steaming

Appendix

You Can Skew Bevel Gears

Climax With Stock Gears

You Can fabricate a Pressure Gauge

Larger Scale Climax

Conversion Chart – MM to Inch

Thread Conversion Table

THE PENNSYLVANIA A3 SWITCHER (THE FIRST PROJECT FOR THE BEGINNER)

The Pennsylvania A3 Switcher
The Pennsylvania 0-4-0 Switcher in 1-1/2" Scale
A Penny Switcher Builder – Yoshiaki Watanabe
A Penny Switcher Builder – Tsutomu Ohto
The Art of Silver Soldering
A Complete Workshop You Can Afford
Tools for a 3/4" Scale Live Steamer

SHOP MADE TOOLS 2013

For the Lathe
For the Mill
Hand Tools
Organizing Things
Workholding
The Rest of the Shop

SHOP MADE TOOLS 2015

For the Lathe
For the Mill
Hand Tools
Organizing Things
Workholding
The Rest of the Shop

THE HOME SHOP READERS' TIP BOOK

Lathe Tips
Mills, Drills, and Other Tool Tips
Shop Organization
Potpourri Tips

THE HOME SHOP READERS' TIP BOOK 2

Lathe Tips
Mill Tips
Shop Organization
Potpourri Tips
From the Past: Chips & Sparks 1991 – 1999

BUILD AN EDM

The Introduction and Box Construction
The Spark Power Supply
The Stepper Motor Logic and Power Board
Installing the Stepper Motor Board and Stepper Motor
The Head and EDM Operation
Other Odds and Ends
Spark Eroding a Broken Stud

IN PURSUIT OF THE PERFECT SHOP
by J. Randolph Bulgin

The Perfect Shop
A Brand-New Machine in Just Six Days
Machining and Measuring Tapers and Angles
Heat Treating
Rotary Devices
Spiders and Steady Rests and Such
Tool Posts
To Cool or not to Cool
After I'm Gone
The Boring and Facing Head
A Day in the Shop
My Favorite Customer
Shop Safety
Indexing Basics
Collets
A Little Something Extra

RANDOLPH'S SHOP
by J. Randolph Bulgin

The Shop
Building a Variable Speed Vertical Band Saw
Removing Broken Taps and Studs by Welding
Building a Rifle Rest
Lifting Devices for the Small Shop
Repairing Worn or Damaged Shafts
Building an Ornamental Fireplace Screen
Building a Better Powder Measure
Some thoughts on Housekeeping and Space Management
Introducing the Best Tool Caddy in the World
Another Wife Pleaser
Organizing Your Tool Box
Just Another Job
Building and Erecting a Flag Pole
Making Eggs

BUILDING SHOP
by J. Randolph Bulgin

Building Shop – A Philosophy and Practice
Threading
Rebuilding a (Your Machine Here)
Debunking the Myths of the Gap Bed Lathe

The Turret/Ram Milling Machine
It's Never too Broke to Fix
Ornamental Iron – Again!
If You Don't Want to Take the Job – Just Say So
Building a Gun Safe
The Care and Feeding of the Twist Drill
Some Things You Need in Your Shop – and You May Not Even Know It
The Engraver's Vise
A Welding Quandary
Turning Between Centers
Machining with Soft Jaws
Sweeping the Head of the Turret Mill
Not Just a Lathe – A Contouring Lathe
A Horizontal Milling Machine – On End
The Wonderful World of Watts
From the Chip Pan

WELDING KNOW-HOW

Welding Overview
Safety
Terms, Joints, and Edge Preparation
Tools and Equipment
Shielded Metal Arc Welding
Wire Feed Welding
Gas Tungsten Arc Welding
Oxyacetylene
Controlling Distortion
Cutting Processes
Brazing and Soldering
Common Problems and Solutions
Design Tips
Fabrication and Repair Tips
Tools and Tooling
Pipe and Tubing
Metallurgy
Power Supplies and Electrical Safety
Bending and Straightening

MACHINE SHOP ESSENTIALS: QUESTIONS & ANSWERS

Measurement Tools, Layout & Job Planning
Basic Hand Tools
Filing & Sawing
Grinding, Reaming, Broaching & Lapping
Drills & Drilling Operations
Threads & Threading
Turning Operations

Milling Operations
Fastening Methods
Machine Shop Steel Metallurgy
Safety & Good Shop Practices
Other Shop Know-How
Sharpening Steel Lathe Tools
Sources of Tools, Materials & Supplies

Other Books by Village Press:

FALK NO.1 LOCOMOTIVE
THE STEAM DONKEY ENGINE
BUILDING THE CLISHAY
BUILD THE SNOW: A TANDEM, DOUBLE-ACTING ENGINE
BUILDING A SINGLE-SHOT, FALLING BLOCK RIFLE ACTION