

Free Metalcraft Plans

Where to Find Plans for Metalworking Tools, Equipment and Techniques

In Magazines published between 1900-1980

Compiled and Edited

By

James R. Walker

(2nd Edition)



Free Metalcraft Plans

(Author's notes, 2nd edition)

Magazine Metalcraft Plans was first self-published in 1981. It started out as a search for magazine articles on making your own metalworking tools and equipment. I soon discovered that there was a lot of really valuable information that had been published over the years. Eventually I decided to research everything I could find from 1900 to 1980 and compile it in booklet form. It seemed a shame for all this great information to go to waste gathering dust in library basements.

That fact is as true today as it was over twenty years ago. So, I am reissuing it, this time in digital format.

The biggest problem accessing the information is getting your hands on the magazines. It often takes some detective work to find them. Very few magazine publishers save issues from far back, if they are even still in business. Usually you have to find old libraries that bound their magazine back issues and still keep them in storage.

I have started my own search of these magazines, especially those now in public domain. In the future I will try to make the articles in them available.

No doubt there have been a lot of really good articles printed since 1980, but I haven't had the time to continue the research. Perhaps someone will step forward to continue it.

James R. Walker, Metalsmith Feb. 2003

Check out our website for more metal-related how-to information!
Click here if you are on line > <http://walkermetalsmith.com>, or paste it into your browser and visit us as soon as possible.

Free Metalcraft Plans

By
James R. Walker
(Copyright 1981 All Rights Reserved)

INTRODUCTION

One of the most important lessons for me as an aspiring metalcraftsman was learning that there usually is more than one way to solve problems. That lesson was doubly important when it came to obtaining tools and supplies. Since I was dead broke most of the time, finding alternative ways around the financial barriers became a way of life.

Most craftsmen eventually accumulate sources and suppliers and other trade information carefully pried from other craftsmen. Basically, this is part of my list. Since much of my experience has made me look for finding ways around the buy-it-new already-made routine, my information is heavily slanted in that direction. Also, since there just hasn't been any one source you can go to for that kind of information, I decided to publish this pamphlet in an attempt to help rectify that.

It is nice to be able to buy a new tool or piece of equipment. But with prices spiraling up and quality spiraling down you can save a lot of money by making much of your own tools and equipment; many times ending up with an even better product. The main stumbling block to this approach is the need for plans. Well, chances are you can find what you need in the over 500 assorted plans I will show you where to find easily and free.

Information is vital to solving problems, and in my particular area of metalcraft I must have constant inflow of information.

I have to credit Lloyd (last name withheld for my own greed) for inspiring me with a philosophy that if you need a tool or a machine or anything, somehow there's a way to get it or do it. He is [has since died] a man of many skills in many areas but his approach is basically the same. Look realistically at the problem, gather all the information you can, exercise ingenuity, hard work, creative imagination, and be able to put up with less than the ideal for a while. It was a ray of sunshine for me to learn from Lloyd that money isn't absolutely

necessary to see my own dreams fulfilled.

Traditionally, the magazines of this country have served as a forum in which problems of every type are dealt with and solutions offered. This is especially true in the area of metalcraft. The following is a collection of magazine articles mostly related to solving metal-working problems. It's information that will serve as a good working reference source.

The articles are free! You just look them up in your local library. Every public library receives most of the magazines listed in this section, although for the really old articles, you will have to find an older library that has bound its back issues or one that has them on microfilm.

Even though some of the information may be out of date, the prices way off and in the older articles you may have to use more caution with chemicals and procedures than indicated, I'm sure you will agree that this valuable information has been molding away too long in the library.

I hope that the information contained in *Free Metalcraft Plans* will help you to attain your metalworking goals easier and more cost effectively.



Model Maker's
DRILL PRESS
Built with Type-Metal Castings

HEMADE castings of type metal give this drill press its neat and trim appearance. It can be made with a few simple tools, and will be useful for drilling those innumerable small holes needed in model work. Chuck and table are easily changed.

The hole drill press in use; the mold with pattern removed and steel rod in place as seen for the bearings; and the rough casting that the sides of the pattern are removed. A short section of steel rod is shown.

LIST OF MAGAZINES

(Abbreviation and complete title)

- Am Artist = American Artist
- Am M Art = American Magazine
- Art World
- Ceram Mo = Ceramics Monthly
- Craft Horiz = Craft Horizon
- Craftsman
- Design
- House B = House Beautiful
- House & Gard = House and Garden
- Ind A & V Ed = Industrial Arts and Vocational Education
- Ind Arts M = Industrial Arts Magazine
- Ind Ed M = Industrial. Education Magazine
- Manual Training
- Mech Ill = Mechanix Illustrated
- Mother Earth News
- Organic Gardening and Farming
- Popular Electronics
- Pop Mech = Popular Mechanics
- Pop Sci = Popular Science
- Sch Arts = School Arts
- Sch Arts M = School Arts Magazine
- Sci Am = Scientific American
- Sci Am S = Scientific American (Supplement Science [also Science n.s])
- Science Iius = Science Illustrated
- Scrib M = Scribner's Magazine
- World
- Workbench

MONTH ABBREVIATIONS

- Ja = January
- F = February
- Mr = March
- Ap = April
- My = May
- Je = June
- Jl = July
- Ag = August
- S = September
- O = October
- N = November
- D = December

ARTICLE CATEGORIES (Click on item to go there.
Click on “(R)” symbol to return back here.)

| <u>Page no.</u> | <u>Category</u> |
|-----------------|---|
| 7. | <u>Buffing, Grinding, Polishing</u> |
| 8. | <u>Drilling</u> |
| 8. | <u>Enameling</u> |
| 9. | <u>Etching & Engraving</u> |
| 10. | <u>Forming, Bending, Forging</u> |
| 11. | <u>Foundry</u> |
| 15. | <u>Hammers/Equipment</u> |
| 16. | <u>Lathes, Mills, Filing</u> |
| 18. | <u>Plating, Patinating, Coloring</u> |
| 20. | <u>Presses, Punches, Stamping</u> |
| 21. | <u>Sanding machines</u> |
| 21. | <u>Saws, cutting equip. & tools</u> |
| 23. | <u>Sawblade brazing</u> |
| 23. | <u>Tools: making & repairing</u> |
| 25. | <u>Welding, soldering, brazing, torches</u> |
| 26. | <u>General metalwork</u> |
| 28. | <u>Miscellaneous</u> |
| 30. | <u>Inexpensive Alternatives</u> |

List format: -article title,-magazine abbreviation,-issue number, -year.

BUFFING, GRINDING, POLISHING (Я)

- Simple foot power compound grinder; Sci Am, 99:264 0,17 '08
- Refinishing brass & copper; Craftsman, 21:445, Ja'12
- Polishing metal with clay; Sci Am S, 81:381, Je, 10'16
- Using concrete for making grindstones; World, 31:428, M '19
- Homemade buffer & grinder; World, 32:619, D'19
- Surface grinding in the lathe; Pop Mech, 44:172, Jl'25
- Surface grinding on a drill press; Pop Mech, 53:867, My'30
- Shaping form tools on a grinder; Pop Sci, 119:85, Ag'31 & 119:85, S'31
- Sturdy surface grinder to finish metals; Pop Mech, 59:317, F'33
- Metal finishing in the home shop; Pop Mech, 64:626, 0'35
- Heavy-duty grinder from old auto parts; Pop Mech, 64:941, D'35
- Homemade spindle & buffs for metal polishing: Pop Sci, 130:94, Mr '37
- It's easy to learn how to sharpen twist drills; Pop Sci, 133:86, Jl'38
- To buff & Polish; Pop Mech, 69:629, Ap'38
- Making metal smooth as glass; Pop Mech, 71;1, Ja'39
- Sharpening small drills; Pop Sci, 137:56, Je'40
- Tool grinding freehand; Pop Mech, 75:788, My'41
- Precision tool-post grinder for the small machine shop; Pop Sci, 139:170 Ag'41 & 139:186, S'41
- Welders drill & grinder from old auto starter; Pop Mech, 76:155, Jl'41
- Built up polishing wheel made from cloth buffers; Pop Mech, 79:135, Jn'43
- Buffing in the home shop; Pop Mech, 101:203, Ap' 54
- Building a long-arm buffer; Pop Mech, 114:172, Jl'60
- How to mount grinding wheels with epoxy; Pop Mech, 132:184, Jl'69

- How to sharpen tiny drills; Pop Sci, 195:174, N'69
- How to make a scalloped polishing wheel; Pop Sci, 198:124, Ap'71
- Build this pedestal grinder for \$40; Pop Mech, 136:144, N'71

DRILLING (Я)

- Worm-gear attachment for sensitive drill press; Pop Mech, 42:325, Ag'24
- Sensitive drillpress for small work; Pop Mech, 56:1037, D'31
- Homemade ball-bearing drill press; Pop Mech, 62:461, S'34
- Pump drill & bow drill; Ind A & V Ed, 28:298, S'39
- Precision drill press for the modelmaker; Pop Mech, 76:135, D'41
- High speed sensitive drill; Pop Sci, 146:180, Ap'45
- Hand powered drill press; Pop Sci, 148:179, Ja'46
- Hand powered drill press; Pop Mech, 87:221, Ja'47
- Drill press made from pipe fittings; Pop Mech, 89:216, Ja'48
- Constructing a small drill press in the school shop; Ind A & V Ed, 38:381, N'49
- Drill press made from auto parts; Pop Mech, 96:195, Ag'51
- You can make your own deep hole drill; Pop Mech, 124:166, Ag'65
- Drill speed control; Pop Electronics, 18:115, N'80

ENAMELING (Я)

- How to enamel etched metal work; Ind A & V Ed, 25:206, Jl'36
- Enameling copper; Ind A & V Ed, 39:358, N'50
- Metal enameling; Ind A & V Ed, 41:20, 0'52
- Build an enamel kiln for \$10; Design, 55:134, Ja'54
- Build an enameling kiln; Ind A & V Ed, 43:279, 0'54

- Short course in enameling; Sch Arts, 54:24, Ap'55
- Add enameling to your metal shop; Ind A & V Ed, 46:289, N'57
- Firing glass enamels on aluminum; Design, 68:12, Mr'67
- Thread making for the enamelist; Ceram Mo, 17:70, 0'69

ETCHING & ENGRAVING (R)

- Engraving machine; Sci Am S, 52:21426, Ag,17'01
- Simple method of etching pictures; Sci Am, 86:121, F,22'02
- Etching metals by electricity; Sci Am, 105:172, Ag,19'11
- Making of etched metal plates; Sch Arts M,22:311, Ja'23
- Dry point bookplates; homemade prints with simple equipment; Sch Arts M, 24:10, 2'24
- Etching steel; Sci Am, 133:287, 0'25
- Make your own engraving machine; Pop Mech, 47:833, My'27
- How to etch brass & copper; Pop Mech, 48:691, 0'27
- Make your own portraits in brass; Pop Mech, 48:663, 0'27
- Making a zinc etching; Ind A & V Ed, 20:317, S'31
- Art silhouettes etched through thin metal; Pop Mech, 59:718, My'33
- Lye etches designs on aluminum; Pop Sci, 123:61, Jl'33
- Typewrite your name on tools; Pop Mech, 61:143, Ja'34
- Fun & profit in electric pen etching; Pop Mech, 61:456, Mr'34
- Etching solutions: Ind A & V Ed, 23:297, S'34
- Cutting out thin sheet metal with acid; Pop Sci, 128:59, Mr'36
- Tools & materials: etching, dry point, aquatint, soft ground, mezzotint; Am M Art, 29:178, Mr'36
- You can write on metal with this easily made vibrating electric pencil; Pop Sci, 128:72, My'36

- Electric engraving pen; Inc A & V Ed, 26:385, N'37
- Electro-engraving with a bottle cork; Pop Mech, 69:621, Ap'38
- Etching glass & metal; Pop Mech, 7Q:459, S'38
- How to make dry points; Pop Sci, 134:172, Mr'39 & 134:186 Ap'39 & 134:174, My'39
- Aluminum etchings & dry points; Ind A & V Ed, 28: 373, N'39
- Electric engraving tool; Pop Sci, 139:176, Ag'41
- Etch; Pop Mech, 86:207, 0'46
- Satisfactory method of etching on steel; Pop Mech, 86:185, 0'46
- How to etch aluminum; Pop Sci, 154:200, Ap'49
- Hand tool etching on aluminum; Sch Arts, 49:213, F'50
- Engraving with phonograph needles; Pop Sci, 160:236, F'52
- Make an electric stencil to etch metal; Pop Sci, 193:154, N'68
- Have fun doodling with this engraver; Pop Mech, .145:174, Mr'76

FORMING (BENDING & FORGING) (Я)

- Jigs in bench metal work; Ind Arts M, 6:357, S'17
- Practical course in sheet metal pattern drafting; Ind Arts M, 12:437, N'23
- Bending tubing; Ind Arts M, 17:285, Ag'28
- Reforging a cold-chisel; Ind Ed M, 30:478, Je'29
- Sheet metal brake; Ind A & V Ed, 19:308, Ag'30
- This homemade forge is portable; Pop Mech, 56:685, 0'31
- Adjustable bending fork; Ind A & V Ed, 30:456, D'31
- Small shop forge made from old cream separator; Pop Mech, 61:303, F'34
- Bending or forming jig; Ind A & V Ed, 24:223, Jl'34
- Bending jig; Ind A & V Ed, 25:220, Jl'36

- Homemade tool shapes metal tubing; Pop Sci, 129:71, N'36
- Making edge bends in band iron; Ind A & V Ed, 26:227, JI'37
- Accurate spiral fluting with this homemade jig; Pop Mech, 69:139, Ja'38
- Adjustable bending jig; Ind A & V Ed, 27:37, Ja'38
- Fluting jig; Ind A & V Ed, 28:297, S'38
- Scroll bending jig; Ind A & V Ed, 27:358, 0'38
- Small efficient bar folder; Ind A & V Ed, 27:353, 0'38
- Light brake for bending sheet metal; Pop Sci, 133:183, N'38
- Forge; Ind A & V Ed, 28:303, S'39
- Shop forge has electric blower; Pop Mech, 76:151, JI'41
- Homemade brake makes accurate bends; Pop Sci, 150:185, Ap'47
- Be your own blacksmith; Pop Sci, 154:206, Ja'49.
- Tin can bending brake; Pop Sci, 165:226, S'54
- Forge: construction & operation; Ind A & V Ed, 44:28, Ja'55
- Using the stake as forming tool; Sch Arts, 56:17, D'56
- Shaping & engraving flat aluminum; Pop Sci, 180:157, Ja'62
- Sheet metal former; Pop Mech, 125:190., F'66
- How to make perfect bends in tubing; Pop Mech, 135:169, Mr'71
- Sheet metal brake you make of wood; Pop Mech, 139:170, Ja'73
- Metal brake you can Make; Mech 111, 74:68, Ja'79.
- Give yourself a brake; Mother Earth News, 56:144, Mr'79

FOUNDRY (casting, furnaces, kilns) [R](#)

- Making castings in Aluminum; Sci Am S, 58:24225, D,24'04
- Metal foundry patterns; Sci Am S, 60:24993 N,25'05
- Making foundry" patterns; Sci Am S, 62:25777, N,3'0.6

- Melting metals & alloys; Sci Am S, 62:25850, D'06
- Making unusual castings; Sci Am S, 6-3:2603, F,23'07
- Making low-priced machines; Sci Am S, 65:100, F,15'08
- Making casts in gelatin-molds; Sci Am, 98:444, Je,2Q'08
- Making fine detail castings in sand; Sci Am S, 66:274, 0,31'08
- Amateurs foundry; Sci Am S, 63:26325, Je,29'09
- Small electric furnace; Sci Am, 102:364, Ap,30'10
- Convenient & inexpensive furnace for very high temperatures; Sci Am S, 71:207, Ap,1'11
- Craftsman fireplace furnace; Craftsman, 20:316, Je '11
- Simple electric furnace; Sci Am, 105:103, Jl,29'11
- Art of making bronze statues from the raw clay to the finished figure; Sci Am, 108:156, F,15'13
- Simple gas burner for small lab furnaces; Sci Am S, 81:85, F,5'16
- Small casting furnace; Sci Am, 116:279, Mr; 17'17
- Melting copper in iron ladles; Sci Am, 116:406, Ap,21'17
- Small castings from alloys & scrap metals; Sci Am S, 85:171, Mr,16 '18
- Hints on making molds for perfect castings in soft metals; World, 32:446, N'19
- On the making of bronzes; Scrib M, 71:251, F'22.
- Molding sands; Science N.S., 55:367, Ap,7'22
- Do's & don'ts for patternmakers; Ind Arts M. 11:456, N'22
- Making castings without sand; Sci Am, 131:101, Ag'24
- Course in pattern making; Ind Arts M, 44:172, Jl'25
- Stove forms homemade furnace; Pop Mech, 45:678, Ap'26
- How to make a simple electric furnace; Ind Ed M, 28:260, F'27
- Gas muffle furnace for small foundry work; Ind Ed M, 29:413, My'28

- Metal for casting in the school shop; Ind Ed M, 31:475, Je'30
- Gas-fired melting furnace for small shops; Pop Mech, 55:1039, Je '31
- Casting *bronzes* in the home work shop; Pop Mech, 57:867, My'32
- Casting small metal parts in the home workshop; Pop Sci, 121:93, 0'32
- Molding equipment for making small castings at home; Pop Sci, 121:96, N'32
- How to set up a sand mold for casting metal at home; Pop Sci, 121:102, D'32
- Inexpensive pyrometer for temperatures up to 1000° C, Science, 77:172, F.10'33
- Experimental arc furnace melts anything; Pop Sci, 122:80, My'33
- First course in patternmaking; Ind A & V Ed, 22:317, 0'33
- Small portable arc furnace easily built of clay & bricks, Pop Sci, 124:61 Ja'34
- Electric arc furnace to melt metals & make alloys; Pop Mech, 61:601, Ap'34
- Arc furnace encased in two flower pots; Pop Sci, 125:100, 0'34
- Homemade furnace melts aluminum with ordinary illuminating gas; Pop Sci, 125:73, D'34
- Molding & casting name plates; Ind A 5c V Ed, 24:270, S'35
- Electric furnace made for two dollars; Pop Sci, 127:72, 0'35
- Tempering & melting furnace for use with diesel torch; Pop Sci, 129:86, Jl'36
- Measuring temperatures in a workshop furnace; How to make a pyrometer & hints on tempering. Pop Sci, 129:118, D'36
- Small gas furnace gives great heat for melting metals; Pop Sci, 130:120, F'37
- Electric temperature indicators; How to make thermocouple pyrometers; Pop Mech, 67:310, F'37
- Electric temperature indicators; How to make thermocouple pyrometers; Pop Mech, 67,310, F'37
- Electric furnace develops temperature of 1650° for enameling, annealing heat-treating, etc.; Pop Mech, 67:641, Je'37
- Simple foundry work; Ind A & V Ed; 26:330, Jl'37

- Casting in the school shop: copper & its alloys; Ind A & V Ed, 26:328, 0'37
- Low-cost crucibles for melting metals; Pop Sci, 132:92, Ja'38
- Making unit castings in the home shop; Pop Mech, 70:953, D'38
- Small foundry for casting the softer metals; Pop Sci, 133:203, D'38
- Art of molding; Ind A & V Ed; 27:284, S'38 & 28:415, D'39
- From pattern to castings; Pop Mech, 70:146, 70:307, 70:467, Ja-Mr, '40
- Inexpensive gas furnace melts soft metals; Pop Sci, 136:203, F'40
- Simple methods identify metal of broken castings; Pop Mech, 74:477, S'40
- Making castings for medals; Ind A & V Ed, 29:388, N'40
- Molding tools & equipment; Ind A & V Ed, 29:3/J, N'40
- Novelty castings; Ind A & V Ed, 29:380, N'40
- Efficient inexpensive foundry furnace; Ind A & V Ed, 30:72, F'41
- Art metal foundry; Pop Sci, 139:170, 0'41
- Electric Kiln; Ind A & V Ed, 32:345, 0'43
- Small electric resistance furnace has many shop uses; Pop Sci, 143:554, N'43
- Sensitive high temperature thermostat will control an electric tempering furnace; Pop Sci, 144:182, My'44
- 2,000° (F) furnace for the shop; Pop Sci, 146:182, Mr'45
- Building & operating a small aluminum melting furnace; Ind A & V Ed, 34:360, 0'45
- Homemade pottery kiln, Ind A & V Ed, 36:263, Je'47
- Good castings from scrap aluminum; Ind A & V Ed, 37:20, My'48
- Furnace for melting nonferrous metals; Ind A & V Ed, 37:289, S'48
- Precision casting by the lost-wax process; Pop Mech, 92:213, Ag'49
- Melting furnace for the foundry area; Ind A & V Ed, 39:279, S'50
- Pattermaking & foundrywork in the general shop; Ind A & V Ed, 39:310,

348, N'50

- Small foundry flask; Ind A & V Ed, 40:165, Ap'51
- Inexpensive gas kiln; Ind A & V Ed, 40:202, My'51
- Firing ovens; Design, 54:165, Ap'53
- How to make a kiln for \$20; Am Home, 50:126, S'53
- Press casting - a simple jewelry technique; Sch Arts, 57:9, Ja'58
- \$8 crucible furnace; Ind A & V Ed, 49:24, F'60
- New steam casting techniques for jewelry; Sch Arts, 61:19, Mr'62
- A kiln is built; Craft Horizon, 25:38, Jn'65
- Sand mold casting with Styrofoam; Sch Arts, 65:36, Je'66
- Make your own metal castings; Pop Mech, 128:162, Ag'67
- Charcoal casting; Sch Arts, 67:26, N'67
- Make your own heat-treating furnace: Electric kiln; Pop Mech, 129:178, F'68
- Exploration in pewter casting; Sch Arts, 69:16, Ja'70
- Kilnbuilding with space age materials; Craft Horiz, 30:46, Ag'70
- Cast jewelry; pewter pendants; Sch Arts, 70:16, Ja'71
- Pewter the humble giant; Sch Arts, 70:20, Mr'71
- We built our kiln; Sch Arts, 73, 42, F'74
- Firing with diesel fuel; Ceram Mo, 23:34, F'75
- Low pressure propane firing; Ceram Mo, 24:34, O'76
- Cold casting with epoxy & metal powders; Am Artist, 41:56, Ap'77

HAMMERS & EQUIPMENT (Я)

- Development of the hammer; Ind Arts M, 13:389, O'24
- Drop-hammer; Ind Ed M, 31:73, Ag'29
- Rebuilding hammer edges with oxyacetylene torch; Ind A & V Ed, 25:123,

Ap'36

- Embossing hammer; Ind A & V Ed, 26:135, Ap'37
- Art metal hammers; Ind A & V Ed, 29:388, N'40
- Trip hammer has many uses in small shop; Pop Mech, 86:219-, 0'46
- Re-handling a hammer; Pop Sci, 158:112, My'51
- Turn yourself a hammer; Pop Mech, 96:214, 0'51
- Repairing a hammer; Pop Sci, 176: 183, Ja'60
- Two soft hammers you can make; Pop Sci, 190:159., Mr'67

LATHES, MILLS, FILING (R)

- Small lathe made of sewing machine; Sci Am, 103:301, 0,15^10
- Homemade speed lathe; World, 32:993, F'20
- How to make & use hollow mills & counterbores; World, 34:897, Ja'21
- Inexpensive bench lathe; World, 34:897, Ja'21
- Bench lathe of simple design; Pop Mech, 41:477, Mr'24
- Milling tools for the home machinists' lathe; Pop Sci, 120:104, My :'32
- Home-made fixtures for holding work to be milled in a small lathe; Pop Sci, 121:89, Jl'32
- Coaxing old milling cutters to do the work of new; Pop Sci, 121:83, Jl'32
- Pewter spinning; Ind Ed M, 34:103, N'32
- Homemade chasing dial for lathe; Pop Sci, 122:71, Ja'33
- Metal turning on a woodworking lathe; Pop Mech, 59:32, F'33
- There's no mystery about metal spinning; Pop Sci, 122:64, Mr'33
- How to spin a hollow metal sphere; Pop Sci, 122:69, My'33
- Spinning metal with sectional chucks; Pop Sci, 122:76, Je'33
- Hints on difficult metal spinning; Pop Sci, 123:83, Jl'33

- Tool-post for lathe; Ind Ed M, 34:85, 0'33
- Gear cutting in the lathe; Pop Sci, 124:62, F'34
- Metal spinning; Pop Mech, 62:952, 0'34
- Spinning a pewter bowl; Ind A & V Ed, 24:234, Ag'35
- Metal turning tool equipment; Pop Mech, 64:30.1, Ag'35
- Metal turning tool slide fits your wood lathe; Pop Mech, 65:463, Mr '36
- Geared cross feed for small lathes; Pop Sci, 130:86, F'37
- Drill-vise milling unit on small lathe; Pop Mech, 71:621, Ap'39
- Chipping and filing; Ind A & V Ed, 28:214, My'39
- Set of lathe drill pads easily made; Pop Mech, 71:281, My'39
- Draw in chucks & spring collets; Pop Sci, 137:148, S'40
- Make your own milling cutters & accessories; Pop Mech, 75:147, Ja '41
- Homemade filing machine saves time in the shop; Pop Mech, 75:301, F'41
- Milling attachment; Sci Am, 164:207, Ap'41
- Inexpensive milling attachment for your lathe; Pop Mech, 80:137, S '43
- Lathe attachment to cut your own small gears', POP Mech, 83:133, Mr '45
- Mill it in the lathe; Pop Mech, 83:130, My'45
- Make your own steady rest; Pop Mech, 85:127, F'46
- Shop made milling attachment fits any lathe; Pop Mech, 86:201, Jl '46
- Drill as lathe; Sci Am, 177:36, Jl'47
- Modernize that old lathe; Pop Mech, 88:202, Jl'47
- Spinning silver; Sci Illus, 2:94, Ag'47
- How to make rotary files; Pop Sci, 151:191, S'47
- How I built a milling machine; Pop Sci, 152:209, Ap'48
- How to turn metals with hand tools; Sci Illus, 3:82, My'48
- Build your own tool-post turret; Pop Mech, 91:221, F'49

- Making draw-in collets; Pop Sci, 155:200, Ag'49
- Filing rest does small milling jobs; Pop Sci, 155:209, S'49
- Metal spinning with aluminum; Ind A & V Ed, 39:330, 0'50
- Spun candlesticks; Ind A & V Ed, 39:402, D'50
- Milling in your drill press; Pop Sci, 160:218, Ja'52
- Collet attachment for metal lathe; Pop Mech, 98:193, S'52
- Metal turning freehand; Pop Mech, 100:198, S'53
- Milling arm for drill press; Pop Mech, 102:191, Jl'54
- Filing machine fits your lathe; Pop Mech, 107:205, Mr'57
- Hand milling attachment; Pop Mech, 108:210, N'57
- Roller rest for precision filing; Pop Sci, 184:140, Ap'64
- Tricks for milling on a lathe; Pop Sci, 188:144, Ja'66
- Basic course in -metal turning; Mech Illus, 64:96, Ap'68
- How to mill on a drill press; Pop Mech, 131:180, Ja'69
- Plumbing fittings make milling attachment; Pop Sci, 197:133, S'70
- Make this faceplate lathe from odds & ends; Pop Mech, 134:194, N'70
- Lathe -milling machine table for about \$10; Pop Mech, 138:172, Jl'72
- Fly cutter holder you can make for your lathe; Pop Mech, 140:172, Jl'73
- Steady rest for lathe milling attachment; Pop Mech, 140:156, Ag'73
- Jaw stretchers give your lathe chuck a bigger bite; Pop Mech, 140:180, N'73
- Make this boring-bar set for your lathe; Pop Mech, 149:72, F'78
- Lathe attachment for sharpening milling cutters; Pop Mech, 151:125, M'79

PLATING, PATINATING & COLORING METAL (R)

- Coloring, gilding, silvering & oxidizing; Sci Am S, 56:23369, D,12 '03
- Plating spoons & forks at home; Sci Am, 101:395, N,27'09

- Coloring cooper; Sci Am S, 83:346, Je'2'17
- Metal coloring; Sci Am S, 85:35, Ja,19'18
- Plating iron with copper automatically; Sci Am, 120:661, Je,21'19
- Hues of rainbow rivaled in copper; Pop Mech, 41:501, Ap'24
- Finishes for handwrought metalwork; Ind Ed M, 31:351, Mr'30
- Decorative finishes on metals; Ind A & V Ed, 19:430, N'30
- Manipulation of gold leaf; Pop Mech, 55:174, Ja'31
- Attractive metal finishes; Ind A & V Ed, 20:412, N'31
- Electroplating with gold & silver; Pop Mech., 58:513, S'32
- Antique verdigris finish for brass 6c copper; Pop Mech, 60:268, Ag '33
- Electroplating in your own laboratory; Pop Sci, 124:48, F'34
- Protective coatings for metalwork; Arch Rec., 77:70, Ja'35
- Preventing silver tarnish; Sci Am, 153:34, Jl'35
- Coloring & finishing copper & brass; Ind A & V Ed, 25:252, Ag'36
- Current for electroplating; Pop Sci, 129:62, N'36
- Copper & nickel plating without cyanides; Pop Mech, 67:630, Ap'37
- Protect brass with transparent lacquer; Pop Sci, 131:10.0, S'37
- Working with gold leaf; Pop Mech, 69:779, My'38
- Chemical coloring of iron, copper, aluminum 6c alloys; Pop Mech, 69:947, Je'38
- Finishing copper; Ind A & V Ed, 27:263, Je'38
- Cleaning & coloring of metals; Ind A & V Ed, 29:77, F'4Q
- How to copperplate wood; Pop Sci, 137:162, Jl'40
- Coloring metal; Ind A & V Ed, 29:430, 0'40
- Coloring metal; Ind A & V Ed, 30:sup 18, My'41
- Decorative plating by dipping process; Pop Mech, 75:781, My'41
- Electroplating aluminum & zinc-alloy die castings; Pop Mech, 75:149, Je' 41

- Electroforming in your workshop; Sci Ill-us, 2:10,2, J1'47
- How to apply gold leaf; House B, 99:128, F'57
- Now electroplating in your own shop; Pop Sci, 181:124, N'62
- Patination of bronzes; Craft Horiz, 25:26, N'65
- How to turn everything into gold; House Sc Gard, 132:224, 0'67
- Electroplating in a flowerpot; Pop Sci, 200:116, F'72
- Forming & etching as a plating process; Sch Arts, 77:30, D'77
- Gilding picture frames; Workbench, 34:52, Je'78

PRESSES, PUNCHES & STAMPING [\(R\)](#)

- Punch press as a shop problem; Ind Arts M, 9:5, Ja'20
- Punch & die press; Ind Ed M, 28:23, J1'26
- Bench punch; Ind A & V Ed, 23:301, S'34
- Patterns & tools for stamping metal; Sch Arts M, 36:621, Je'37
- Marking metal; Pop Mech, 74:153, J1'40
- Miniature punch press does difficult jobs; Pop Sci, 145:190, D'44
- Light punch press from a bicycle fork; Pop Sci, 143:182, Je'46
- Making hollow punches to order; Pop Sci, 153:186, Ag'48
- Make your own automatic punch; Pop Mech, 100:197, S'53
- Punches for sheet metal & cardboard; Pop Mech, 100:183, D'53
- Punch press; working drawings; Ind A & V Ed, 45:278, 0'56
- Arbor press for a small shop; Pop Mech, 107:211, Ap'57
- Making a bench punch; Pop Mech, 111:189, Je'59
- Self hammering layout punch; Pop Sci, 184:152, My'64
- Special-shaped punches you can make; Pop Mech, 128:172, D'67
- How to make an arbor press; Pop Sci, 192:146, F'68

- Hand-operated arbor press; Pop Mech, 138:154, S'72

SANDING & SANDING MACHINES (R)

- Emery-coated tools; Sci Am, 85:263, 0,26'01
- Belt sander; Pop Mech, 90:197, Ag'48
- Make your own belt sander; Pop Sci, 195:232, D'49
- Belt sander mounts on lathe; Pop Mech, 118:186, N'62
- Spindle sander in an evening; Pop Mech, 118:168, 0'62

SAWS, CUTTING EQUIPMENT & TOOLS (R)

- Art of cutting metals; Sci Am S, 63:25929, Ja.5'09.
- Scroll-saw; Sci Am, 100:267, Ap'09
- How to make a scroll saw or filing machine; World, 33:339, Ap'20
- Constructing a cut off saw; Ind Arts M, 13:427, N'24
- Jigsaw for a dollar; Pop Mech, 43:51, Ja'25
- Power hacksaw for small shops; Pop Mech, 51:157, Ja'29
- Homemade handsaw for your workshop; Pop Mech, 59:637, Ap'33
- Using your hacksaw; Pop Mech, 62:631, 0'34
- Homemade handsaw from pipe fittings & auto parts; Pop Mech, 63:951, Je'35
- Hand-power scroll saw; Ind A & V ed, 24:346, N'35
- Sturdy power hack saw built at low cost; Pop Sci, 128:62, Mr'36
- Drive your hacksaw electrically; Pop Mech, 67:141, Ja'37
- Nibbling machine; Ind A & V Ed, 27:165, Ap'38
- Reclaiming hacksaw blades; Pop Sci, 142:530, F'43
- Homemade jigsaw; Pop Sci, 145:190, Mr'44

- You can build this sturdy scrollsaw; Pop Mech, 84:121, Ag'45
- From sewing machine to jigsaw; Pop Mech, 86:177, Ag'46
- Cutting heavy metal with your jigsaw; Pop Mech, 87:217, My'47
- Metal rod cutter; Sci Am, 177:82, Ag'47
- Tin snips converted to bench tool; Pop Sci, 152:213, Ap'48
- Homemade cut-off wheel slices steel; Pop Sci, 153:188, Ag'48
- Your electric drill can cut sheet metal; Pop Sci, 156:184, Ja'50
- How to make a power hacksaw; Pop Mech, 96:197, Jl'51
- Metal-cutting handsaw made from old lawn mower; Pop Sci, 163:223, 0'53
- Jigsaw from small engine block; Pop Mech, 101:219, Ja'54
- Rod & bolt cutter for your shop; POP Mech, 112:226, 0'59
- Lathe doubles as metal shear; Pop Mech, 114:234, 0'60
- Sewing to sawing; conversion of old sewing machine; Pop Mech, 117:192, Ja'62
- Bike saw; Pop Mech, 121:186, F'64
- Homemade power hacksaw for less than \$20; Pop Sci, 184:162, F'64
- How to cut metal with woodworking power tools; Pop Sci, 186:128, Je '65
- Speed reducer for metal cutting; Pop Mech, 124:152, D'65
- Here's an easy way to make an abrasive cutoff machine; Pop Mech, 128:184, N'67
- Build this power hacksaw from a washing machine; Pop Mech, 132:188, N'69
- Abrasive cutoff machine you can make for \$15; Pop Mech, 136:166, S '71
- Metal cutoff machine; a mighty handy shop tool; Pop Mech, 147:148, D'74
- Deburring jig makes saw cuts smoother; Pop Mech, 144:76, Ag'75
- Easy to make sheet-metal cutter; Pop Mech, 145:170, Ap'76
- Low-cost cutoff saws you can make; Pop Mech, 145:109, F'76

SAWBLADE BRAZING (R)

- Brazing a handsaw; Ind Ed M, 28:261, F'27
- Brazing the handsaw; Ind A & V Ed, 20:109, Mr'31
- Brazing handsaw blades; Pop Mech, 70:139, Jl'38
- Brazing a handsaw; Ind A & V Ed, 27:296, S'38
- Silver soldering handsaw blades; Pop Mech, 104:219, D'55

TOOLS: MAKING & REPAIRING (R)

- Foot-power hammer; Sci Am, 82:52, Ja,27'1900
- Making chisels & other tools from files; Sci Am S. 50:20899, D,29'00
- Tool-making; Manual training, 21:340, Je'20
- Vacuum gage; Ind Arts M, 18:199, My'29.
- Handy depth gage; Ind Arts M, 18:389, 0'29
- Preventing tools from rusting; Ind A & V Ed, 19:277, Jl'30
- Hardening & tempering small tools; Pop Mech, 55:687, Ap'31
- Hints on salvaging high-speed tools; Pop Sci, 118:98, My'31
- Tips on tempering tools; Pop Sci, 119:91, Jl'31
- Rewinding motors; Ind A & V Ed, 21:311, 0'32
- Right way to true up worn drill chucks & other useful info; Pop Sci, 122:22, My'33
- Toolmakers clamp or vise; Ind A & V Ed, 22:235, Jl'33
- Surface-gage; Ind Ed M, 35:32, Ag'33
- Useful anvil; Ind A & V Ed, 23:190, My'34
- Rewinding motors; Pop Mech, 62:794, N'34
- Tools you can make from drill rod; Pop Mech, 65:311, F'36
- Welder's bench made from scrap materials; Pop Sci, 129:71, S'36

- 'Toolroom tray for metal files'; Ind A & V Ed, 25:387, D'36
- Metal tooling; Pop Sci, 130:79, Ja'37
- Model-maker's vise has universal action; Pop Mech, 68:781, N'37
- Make your own hand chucks & pin vises; Pop Mech, 74:301, Ag'40
- Handy vise; Ind A & V Ed, 29:367, N'40
- New tools from old; Ind A & V Ed, 32:325, 0'43
- Jeweler's vise; Ind A & V Ed, 32:436, D'43
- How to clean a blowtorch; Pop Sci, 144:190, Mr'44
- Make your own surface gage; Pop Mech, 81:121, Je'44
- Building a drill-press vise; Pop Sci, 145:180, 0'44
- Vacuum gage; Ind A & V Ed, 34:34, Ja'45
- New life for those worn pliers; Pop Sci, 146:182, F'45
- Flexible-shaft tool uses speedometer cable; Pop Sci, 150:172, Ja'47
- Details & assembly of machinist hand vise; Ind A & V Ed, 36:126, Mr '47
- Pantograph; Ind A & V Ed, 39:199, My'50
- Homemade tools from old auto valves; Pop Sci, 158:193, F'51
- How to judge used power tools; Pop Sci, 159:201, 0'51 & 159:232, N
- Small bench vise; Ind A & V Ed, 42:227, S'53
- How to build a good workbench; Pop Sci, 167:116, S'55
- Turn a can into a tray; Workbench, 13:25, My'57
- Make your own workbench & tool cabinet; Workbench, 13:38, Jl'57
- Shop pantograph copies anything; Pop Mech, 119:164, Je'63
- Make this two way machine-vise clamp; Pop Mech, 130:168, N'68
- Make a pantograph for your router; Pop Sci, 197:104, 0'70
- How to repair your electric drill; Pop Mech, 151:102, Ja'79
- Give a new life to abandoned tools; Mother Earth News, 55:160, Ja'79

- New tools from old files; Pop Sci, 177:186, D'60
- Seven tools you can make from lathe bits; Pop Sci, 185:123, N'64
- Don't bypass the hobby shop; hard to find tools & materials; Pop El-ectr. 35:50, 0'71

WELDING, SOLDERING, BRAZING, TORCHES (Я)

- Hard-soldering for enameling purposes; Sci Am S, 59:24287, Ja,21'05
- How to solder aluminum; Sci Am, 100:121, F,6'09
- Homemade electric welder; Pop Mech, 42:831, N'24
- Building a two-kilowatt spot welding set; Pop Mech, 44:867, N'25
- Making a soldering fluxes; Pop Mech, 45:867, My'26
- Blowtorch made from gasoline lamp; Pop Mech, 46:685, 0'26
- Powerful gasoline torch; Pop Mech, 47:517, Mr'27
- Brazing cast iron & other metals; Sci Am S, 66:283, 0'31
- Pistol-grip blowpipe simplifies silver soldering; Pop Sci, 120:96, My'32
- Gasoline cutting torch; Sci Am, 147:46, Jl'32
- Secret of soldering aluminum; Pop Sci, 121:78, S'32
- Brazing & silver soldering; Pop Mech, 58:682, 0'32
- Homemade soldering equipment for the general shop; Ind A & V Ed, 23:216, Je'34
- Soldering spouts on pewter creamers; Ind A & V Ed, 23:260, Ag'34
- Soldering with an electric arc; Pop Mech, 62:621, 0'34
- Shopmade air-diesel torch gives intense heat; Pop Sci, 128:84, Je '36
- Soldering aluminum; Pop Mech, 66:461, S'36
- Simple lab made blast lamp; Science, 84:296,. S,25'36
- Electric arc torch; Pop Mech, 67:781, Mv'37

- Arc welder built for fifteen dollars; Pop Sci, 130:69, Je'37
- Forge welding; Sci Am, 146:283, My'37
- Spot welder; Pop Sci, 131:98, S'37
- Vacuum-cleaner soldering torch; Ind A & V Ed, 27:74, F'38
- Stainless steel soldered, brazed & welded; Pop Mech, 69:788, My'38
- Tin-can soldering furnace; Ind A & V Ed, 27:30.2, S'38
- Welding sheet iron; Pop Sci, 133:70, S'38
- Welding aluminum with the oxyacetylene torch; Pop Sci, 137:164, Ag '40
- Inexpensive blowtorch; Ind A & V Ed, 29:391, N'40
- Gas torch works without compressed air; Pop Mech, 76:143, Jl'41
- Acetylene brazing torch requires no oxygen; Pop Sci, 140:38, Je'42
- Gas blowtorch; Ind A & V Ed, 31:353, O'42
- Battery carbons for welding & cutting; Ind A & V Ed, 31:295, S'42
- When & how of silver soldering & brazing; Pop Sci, 148:178, Ap'46
- Gas torch from brass tubing; Pop Sci, 149:115, N'46
- Welding with an alcohol torch; Sci Illus. 2:102, S'47
- Spot welding on your drill press; Pop Sci, 156:157, S,3'49
- Shop-made torch solders or welds; Pop Sci, 157:203, S'5Q
- Welded all-steel soldering bench; Ind A & V Ed, 43:26, Je'54
- Soldering jig; Ind A & V Ed. 49:40, O'60
- Make your own arc welder; Pop Sci, 187:142, N'65
- Build this handy arc-welding gun; Pop Sci, 190:149, F'67
- Build yourself this carbon arc welder for \$5; Pop Mech, 128:174, S '67
- Simple jig holds small parts for soldering; Pop Sci, 19-6:105, Je'70
- How to weld with your lathe; Pop Sci, 196:67, Je'7Q
- Torch stand & lead ladle; Pop Mech, 135:174, Ja'71

- Pinpoint propane torch; Mech Illus, 67:92, Ja'71

GENERAL METAL WORKING TECHNIQUES (R)

- Overcoming difficulties in hammering copper; Craftsman, 19:99, O'IQ
- Spoon-making; Manual training, 15:123, D'13
- Developments in American silversmithing; Art World, 2:192, Mr'17
- Making of the spoon; Art World, 2:559, S'17
- Art metal work; a course in manual training; Ind Arts M, 7:86, Mr '18
- Hand forged spoons; Ind Arts M, 12:276, Jl'23
- You can do hammered-copper work; Pop Mech, 46:873, N'26
- Equipping a shop for bench metalwork; Ind Ed M, 28:334, Ap'27
- Making a pewter bowl; Ind Ed M, 31:146, O'29
- Pewter in the art-metal shop; Ind Arts M, 19:170, My'30
- Estimating the blank required for holloware; Ind A & V Ed, 20:222, Je '31
- Inlaid art metal work; Ind A & V Ed, 20:450, D'31
- How to ornament plain metal tubing with spirals; Pop Sci, 124:74, Je'34
- Pewter tea set; Ind A & V Ed, 24:126, Ap'35
- Flame sculpture by means of the oxyacetylene process; Sci Am, 155:284, N'36'
- Modern pewtercraft; Ind A & V Ed, 25:344, N'36
- Simplified brass tapping; Pop Mech, 66:903, D'36
- Easy way to inlay metal with metal; Pop Sci, 130:124, F'37
- Modern candleholders turned from homemade pewter casting; Pop Sci, 131:95, N'37
- Hand-hammered textures; Ind A & V Ed, 27:39, Ja'38
- Copper modeling; Sch Arts, 37:191, F'38
- Sugar bowls & creamers; Ind A & V Ed, 27:336, O-N'38
- Metalworking kinks; Ind A & V Ed, 27:398, N'38

- Welded metal sculpture; Sci Am, 160:160, Mr'39-
- Wrought-iron work; Pop Sci, 134:194, Ap'39
- Steps in making sterling silver jewelry; Pop Sci, 131:10.2, N'39
- Modeling in sheet metal; Pop Mech, 73:897, Je'40
- Finishing hammered iron; Ind A & V Ed, 30:(supplement) 84, Mr'41
- Art metalwork; Ind A & V Ed, 30:253, Je'41
- Pewter art metalwork; Ind A & V Ed, 30:291, S'41
- Shortcuts in diemaking; Pop Mech, 79:146, F'43
- Cutting an art metal die; Ind A & V Ed, 44:194, Je'44
- Raising aluminum cups; Ind A & V Ed, 35:28, Ja'46
- Indian Silver smithing; Ind A & V Ed, Ja,F, A-N'48. & Ja - Ap'49
- You can make brass handles for furniture; Pop Sci, 155:211, D'49
- Metalsmithing U.S.A.; Craft Horiz, 35:22, F'75
- Gleaming pewter tableware you can make; Pop Mech, 152:92, Ag'79

MISCELLANEOUS (R)

- Generators (acetylene); Sci Am S, 53:21969, Ap,12'0.2
- Fillings for delicate hollow sheet-metal work; Sci Am S, 61:25404, My, 19'06
- Grinding wheel sparks: how they indicate the characteristics of steel; Sci Am S, 75:297, My,10'13
- Casehardening bronze for dies; Sci Am S, 83:61, Ja,27'17
- Simple gas generator for lab use; Science n.s., 56:287, S,8'22
- Britannia metal; Ind Arts M, 12:338, 12:387, 12:464, 13:5, 13:56, 13:141, 13:178, 13:411, S-0, D'23 & F,Ap,My,N'24 >
- How gold leaf is made; Sci Am, 130:244, Ap'24
- Sword making as a peacetime art; Pop Mech, 43:51, Ja'25
- Repairing broken pewter; Pop Mech, 49:859, My'28

- Getting rid of the smoke; Ind Ed M, 31:324, F'30
- Resilvering mirrors at home; Pop Sci, 118:98, Mr'31
- How to silver mirrors. Pop Mech, 60:770, N'33
- How to use bronze powders; Pop Mech, 83:96, Je'45
- How to run many tools with one motor; Pop Sci, 164:166, Ap'54
- Arts & crafts supplies, sources and books; Am Artist, 33:22, F'69
- Resource materials: books, filmstrips, film, slides, loops; Sch Arts, 69:32, Ja'70
- Treadle power in the workshop; Org Gard & Farm, 24:83, Je'77
- How to scrounge; Design, 79-: 26, Ja'78

INEXPENSIVE ALTERNATIVES (R)

- Surface plate (used as flat reference surface): Flawed polished granite slabs used for memorial stones. Shops that polish granite slabs often save pieces that are too marred for the original use.
- Carborundum abrasives: Granite-working shops that slab the granite from the raw stone usually use a wire saw for that cutting operation. This saw uses carborundum as its cutting agent. As it wears it breaks down into finer particles which are separated depending upon how fine they are. If you don't need super accuracy in the size of the abrasive, this makes an excellent inexpensive source for carborundum powder.
- Foundry flux: - Pop Bottles. For brass or bronze you will need a good hook to pull it off of the metal just prior to pouring. Laundry boraxo works well also, but needs to be completely skimmed off before pouring or it may flow with the metal and ruin the castings. Actually, if you use clean ingot brass or bronze, you won't need as much flux. It's cheaper and works much better to only pour clean metal.
- Metals: Scrap yards work well for lead, pot metal, zinc, copper, brass, bronze, aluminum, iron, steel, tool steels, pewter, tin, depending on how and where they do their buying.
- Swap meets, flea markets, surplus shops and scrap yards are good sources for used items that you may rebuild or repair. It's a good idea to have a current catalog that lists the prices of the item you want to buy; The idea is to buy it for less than the new price (some of these shops don't completely understand that.)
- Scratch paper: Ends of newspaper rolls many times are thrown away in the dumpster behind newspaper publishers.
- Sheet rubber: Old inner tubes; try local highway.
- Clear sheet glass: The trash cans behind the glass companies.
- Ovens: Low temperatures: Fit a light bulb into used rural mailbox. Medium high temperatures: deep fat frying devices, and metal coffee pots. These have thermostats that can be tampered with to adjust to a wide variety of settings.
- Lost wax investment: Plaster 307o, 300 mesh silica sand 70%. Fine foundry sand: 300 mesh silica sand tempered with glycerin.
- Used clay can be salvaged from pottery classes.