

The Construction of a Radio Work Bench

Description of a versatile piece of shop furniture which may be conveniently arranged for the Radio Service Man's use

By H. L. WEATHERBY



Mr. Weatherby's original design for the home mechanic. Everything is conveniently located, and the tools for wood and metal working are at hand.

IT is very unusual to find a man with no mechanical ability and with no desire to make things. It seems to be as human a trait for the young male of the species to desire mechanical playthings and tools, as for the girls to want to play with dolls. This tendency should be encouraged in the boy; and in adult life it may develop into one of the most interesting of pastimes and hobbies. The home workshop should be a part of every man's and every boy's home. It may occupy an attic room, a place in the basement or garage; but, wherever it may be, every man should have a place where he can tinker with parts of the family car, where he can take his radio apart and put it back together, or build one, where he can make new or repair the old furniture. In short, he ought to have a play room, but a play room that will yield marvelous returns in peace of mind and in products turned out.

The shop should be well lighted naturally and artificially, for day or night work. A basement room is usually dark and damp. Tools become rusty and the floor is usually of cement, which is hard to stand on. Then, too, edge tools which are dropped on it dull readily, and others break. In building a house one room, well lighted and ventilated, should be left for a shop.

Another feature to consider is heat, in northern climates particularly. The shop should be supplied with heat; gas, if available, should be piped to the shop; an electric light line, by all means, should be at hand; and running water is a great convenience. None of these things, however, is an absolute necessity; so do not be discouraged if

you lack some of them. The main considerations are light, ventilation, and good tools. Even the best workman cannot do good work with bad tools.

OR WHAT HAVE YOU?

WE will be glad to receive from any of our readers suggestions as to the ideas which they have found time- and trouble-saving and generally useful in the radio workshop. The bench equipment designed by Mr. Weatherby is here shown with illustrations indicating its adaptation to radio service and repair work, as well as set building and experiment.—*Editor.*

Design of Work Bench

The work bench illustrated is one which no workman, skilled or otherwise, need be ashamed of. It is sturdy and is of sufficient size to meet all ordinary demands. It has an electrical outlet for the soldering iron, glue pot, and other electrical appliances. A gas connection is mounted on the board for use with a Bunsen burner or where an electrical glue pot is not available. Ample space on the back is provided for tools. A trough is provided in the top for planes; saws may be hung on the ends of the bench. A nail-and-screw compartment box is found in a convenient place; and cabinets and drawers below furnish ample storage space for finishing materials and special tools. The

At the left, the work bench is shown equipped with meters for the Service Man's use. In this position, they will be most convenient for service testing.

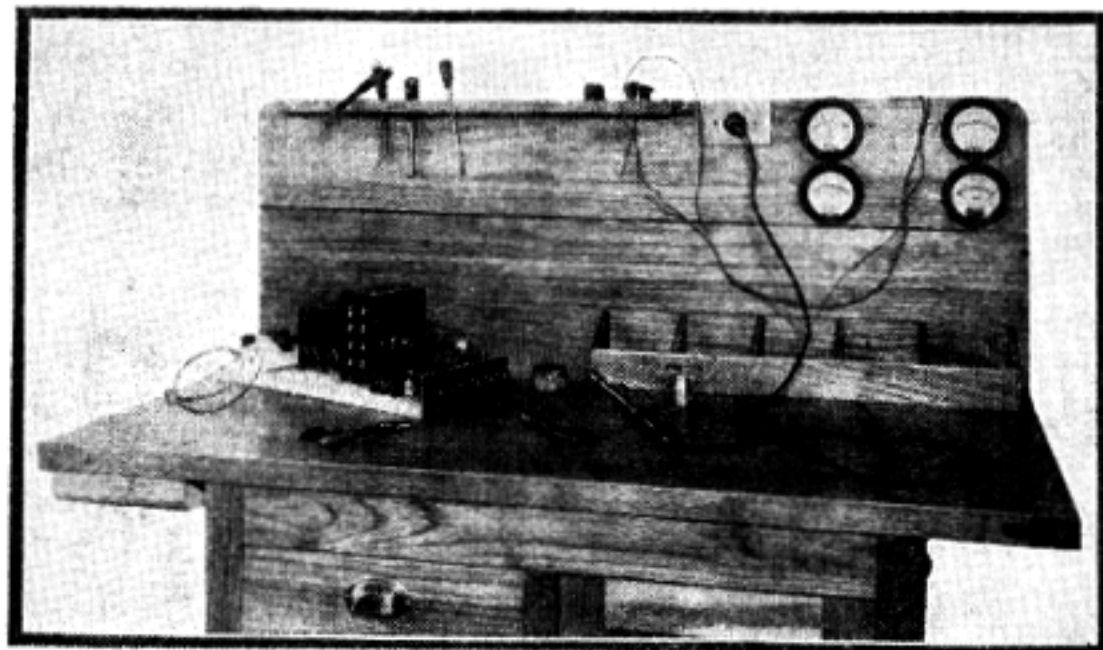
bench should be fitted with a good wood-worker's vise and a small machine vise. The total cost, not including equipment, probably will not exceed twelve dollars.

The material may be purchased machined to size and simply assembled at home; though it may cost slightly more if this is done. Taking for granted that a shop is just being equipped, both tools and equipment are scarce; and it will not be an easy matter to build a bench lacking proper implements with which to build it. The construction of this bench, however, is very simple and with the ordinary home tools it is easily assembled.

Bill of Lumber

Secure from the mill the following material, which should be maple or oak. Maple makes the best work bench, but a good grade of white oak runs it a close second:

- 4 pieces for legs, 2 in. x 2½ in. x 32½ in.;
- 1 piece for top, 1½ in. x 23 in. x 44 in.; this should be glued up from narrow strips, and grooves should be cut in each end for the end pieces, the grain of which runs at right angles to the top. The tool trough should also be cut in the back side and a ½ in. piece set in from the bottom with screws.
- 2 pieces for top 1½ in. x 3 in. x 23 in.; these are to have tongues cut on them, to fit the grooves in the ends of the top.

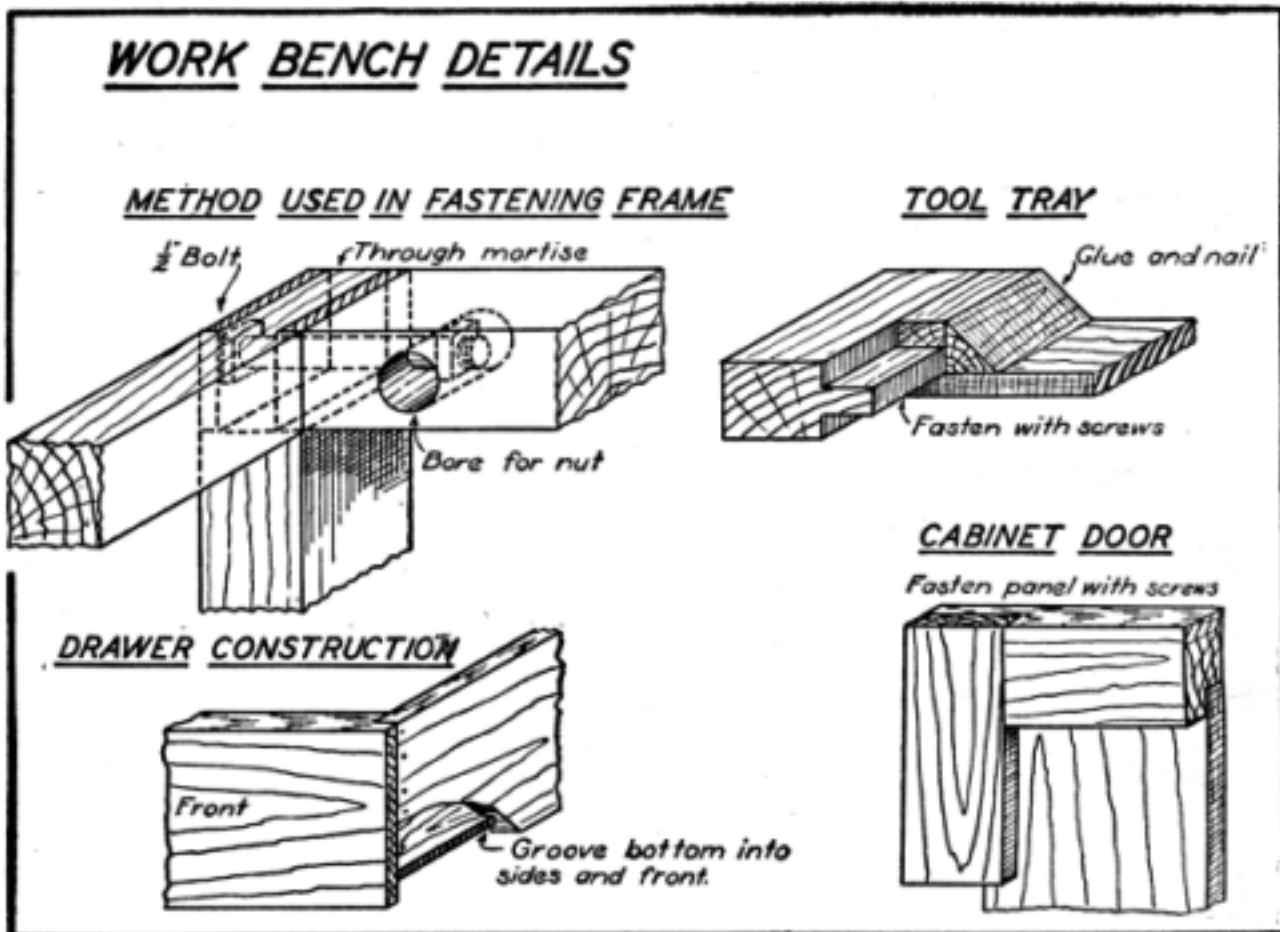


The work bench rearranged for the use of the Service Man; the radiotician's tools replace the carpenter's. The Jewell meters shown are: one A.C. "Model 78," 0-3-15-150-volt reading; and three D.C. "Model 88" with these scales—0-15-150 ma. and 0-75-volt; 0-1-10-amp.; and 0-150-300-750-volt.

- 4 pieces for long frame, 2 in. x 2 1/2 in. x 33 in.;
- 4 pieces for end frame, 2 in. x 2 1/2 in. x 18 1/2 in.;
- 1 piece for tool panel, 1 in. x 18 1/2 in. x 48 in.; this will probably have to be glued up.
- 2 pieces for ends, 3/4 in. x 18 1/2 in. x 19 in.; these are to be fastened in places with screws.
- 1 piece for back, 3/4 in. x 23 in. x 29 in.;
- 1 piece for drawer front, 3/4 in. x 3 1/2 in. x 16 in.;
- 1 piece for drawer front, 3/4 in. x 6 in. x 16 in.;
- 1 piece for drawer front, 3/4 in. x 7 1/2 in. x 16 in.;
- 3/8 in. soft wood for sides and backs of drawers, and 1/4 in. plywood for bottoms;
- 2 pieces for door, 3/4 in. x 2 in. x 19 in.;
- 2 pieces for door, 3/4 in. x 2 in. x 12 in.;
- 1 piece for door, panel 1/4 in. x 9 in. x 16 in.;
- 1 piece for partition, 1 in. x 21 3/4 in. x 22 in.; this may be common pine faced with an oak strip on the front edge;
- 1 piece for bottom, 1/2 in. x 18 1/2 in.;
- 2 pieces for drawer partitions, 1 in. x 2 1/2 in. x 17 in.;
- Scraps for drawer slides;
- 6 pieces for nail box 1/2 in. x 3 1/2 in. x 4 in.;
- 1 piece for nail box, 1/2 in. x 2 in. x 24 1/4 in.;
- 1 piece for nail box, 1/2 in. x 4 in. x 24 1/4 in.;
- 1 piece for tool holder 1 in. x 1 1/2 in. x 28 in.

All this wood should be surfaced and sanded, if it is possible to have this done. However, if the frame of the bench and the top can be assembled, a vise may be attached and the job finished on the bench itself while under construction.

For assembling of the frame, through mortises are cut in the legs, for the long or front and back rails. The short or end rails are cut perfectly square and to the right length, and held in place with long bolts (as the drawings show) which also hold the tenons in the long rails.



The joints used in framing the bench are shown here in such a manner that their exact nature may be determined. The construction is simple; and the worker who has not the facilities for doing this joinery can frequently purchase the woodwork ready finished for assembly.

After the frame has been securely bolted together, the top is fastened down with long screws through the end and side rails. After this the vise may be mounted on the left end, which projects slightly farther than the right end to care for this. The bench then may be finished up at one's leisure and at home.

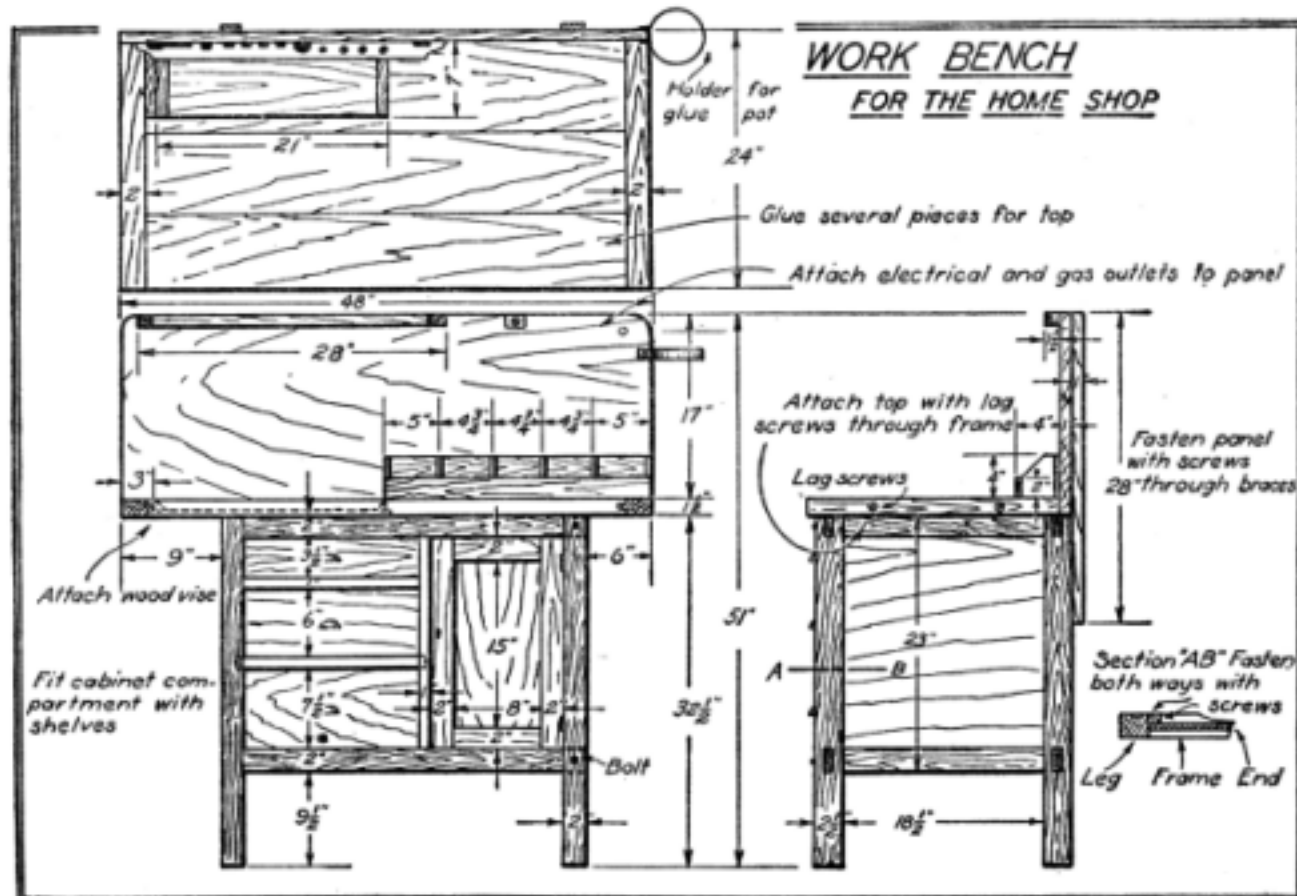
The construction and fitting of all parts are fully shown in the details. Pulls, hinges, and lock should be set; and then the bench should be carefully sanded, given a coat of light filler, and varnished with one or more coats of good varnish. The bench, if carefully constructed of good sound hardwood, will be a very strong, serviceable piece of equipment.

Equipping the Shop

With the bench constructed we should turn our attention to equipping the shop. Nearly everyone has a few of the common tools; but we will give a rather complete list, to select from as pocketbook and desires suggest. The prices given are only approximate, but they will serve as an indication of what one should pay.

| | |
|--|--------|
| Block plane | \$1.50 |
| Jack plane | 3.25 |
| Marking gauge | .50 |
| Try Square | .50 |
| Back saw | 1.75 |
| Hand crosscut saw | 2.00 |
| Hand rip saw | 2.00 |
| Wood vise | 4.00 |
| Machine vise | 5.00 |
| 1/4 in., 1/2 in., 3/4 in., 1 in. chisels | 4.00 |
| Dividers | .50 |
| Spokeshave | 1.00 |
| Square | 1.00 |
| Rule | .10 |
| Duplex oil stone | .50 |
| Cabinet scraper | .90 |
| Pliers | .25 |
| Bit brace | 2.00 |
| Set of bits | 2.00 |
| Nail sets | .20 |
| Hammer | .90 |
| Mallet | .50 |
| Countersink | .20 |
| Hack saw | .35 |
| Coping saw | .25 |
| Files | .25 |
| Screwdriver | .25 |
| Automatic drill | 1.50 |
| Glue pot | 1.75 |
| Bunsen burner | .75 |
| Emery grinder | 2.00 |

The list given here will cost approximately forty dollars. It can be added to as occasion demands; wrenches, punches, drills, snips, soldering iron, etc. It is largely a question of the nature of one's work and what he may wish to invest. On the other hand, ten dollars spent on tools will yield wonderful returns.



The complete detail of the different parts of the work-bench is included in this sketch, the plan view being at the top. The modifications to adapt it to radio service use are simple and at the option of its future user.



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