

There isn't a heck of a lot you can get for two cents these days, but given the average amateur's tenacity and famed frugality, this project should satisfy most of us.

# The Tuppenny Paddle

## Build an Iambic Paddle for Two Cents!

BY GEORGE MURPHY\*, VE3ERP

I am sick and tired of cheap braggarts telling me how their latest homebrew project "didn't cost me a cent." A cursory glance at the plans for *this* project will prove that no matter how you cut it, this

\*77 McKenzie Street, Orillia ON L3V 6A6, Canada

paddle will cost at least two cents. The Tuppenny Paddle has all the features of commercial paddles, and if you will permit a bit of braggadocio, it didn't cost me a cent. The two pennies came from my XYL's piggy bank, but she will never know unless she pulls a surprise audit.

All you will need to build the Tuppenny

Paddle are two pennies, a spring clothespin, a discarded ballpoint pen, some scrap bits of wood, and a few nuts, bolts, and washers.

### Preparation

The secret of success in amateur gear homebrewing and brain surgery is proper

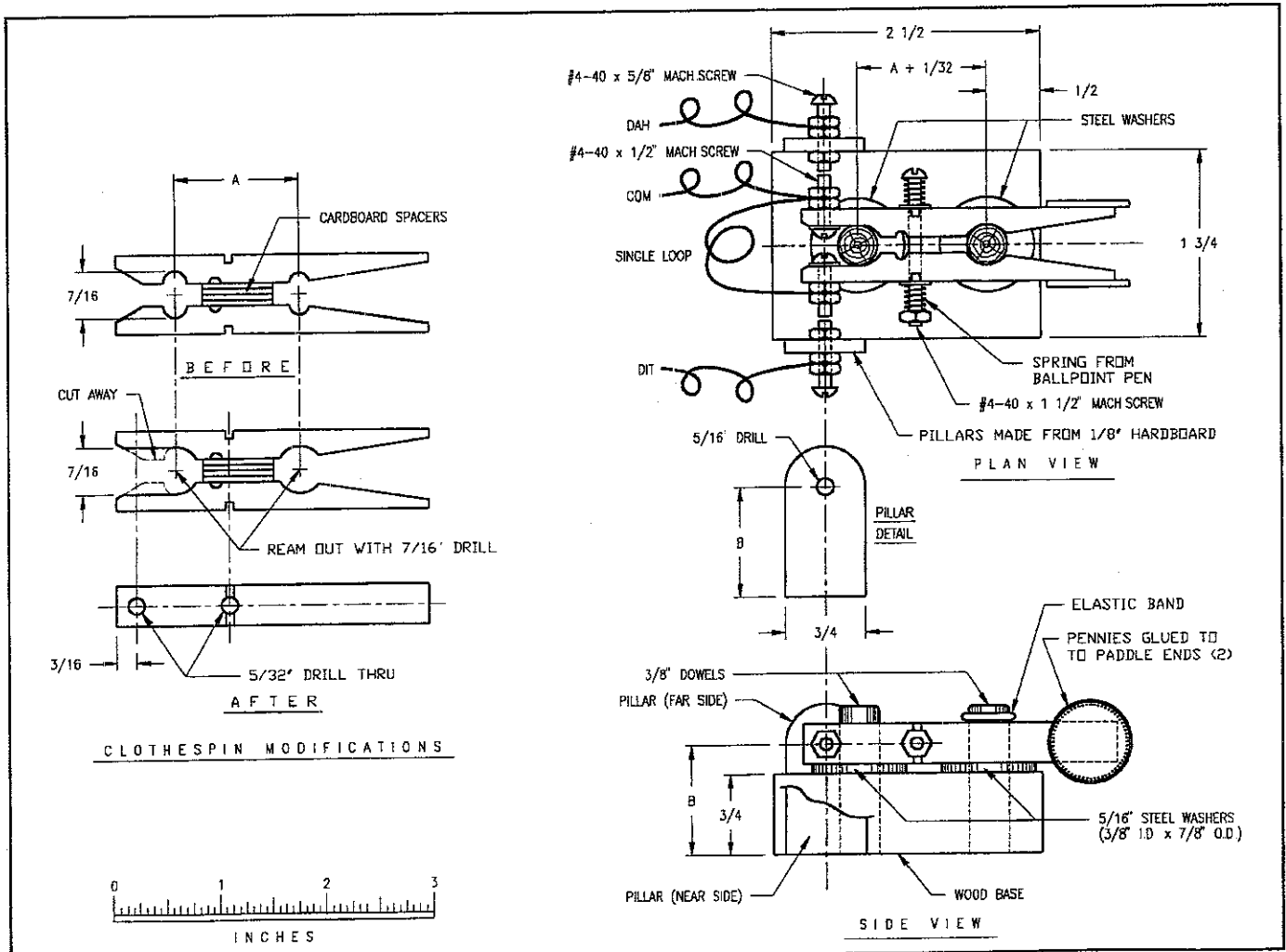


Fig. 1—Mechanical diagram for the Tuppenny Paddle. (All dimensions shown are in inches)

preparation. With the skill and dexterity of a brain surgeon, disassemble a spring clothespin by removing the spring. Cut a few pieces of cardboard to make a laminated spacer, as shown in the "before" drawing (use as many laminations as required to achieve the 7/16 inch spacing shown between the jaw grooves). Glue the cardboard pieces and the two clothespin pieces together and clamp the assembly until the glue is dry. Measure distance "A" shown on the "before" drawing and make a note of it for later use. The purpose of all this gluing is to keep bits and pieces from squirting all over the place during the next operation.

While the assembly is still clamped, carefully ream out the grooves with a 7/16 inch bit in a hand drill, or in a power drill at its slowest speed. Cut away the jaws as shown with a sharp knife. Remove the assembly from the clamp and drill 5/32 inch holes through the wood pieces; then cut away the cardboard spacers. If you are the fussy type, you can sand and paint the wood pieces. If you intend to operate your rig while scuba diving, then use marine varnish.

The base is a piece of 1x2 lumber 45 mm (1 3/4 inches) long. Drill two 3/8 inch holes located as shown on the plan view. Note that the spacing between the holes is 1/32 inch greater than dimension "A." This is to make sure there will be no binding of the moving parts. If at all possible, drill the holes in a drill press to ensure the dowels will sit up nice and straight in the wood base.

Make two pillars out of scrap hardboard or rigid plastic. Dimension "B" can be determined from a preliminary assembly of parts as shown in the side view. Cut two pieces about 35 mm (1 3/8 inch) long from a length of 3/8 inch diameter dowel.

Glue the pennies to the paddle ends with epoxy glue, and the tricky stuff is finished. Once epoxy glue sets, there is no turning back. Whether to glue the pennies heads facing out, both tails facing out, head to head, or tail to tail is a tough decision you must face alone. If you can't handle it, ask for help on the Internet.

### Assembly

Glue the two dowels into the base. Install all the screws, nuts, and washers as shown in the drawing. Cut the spring from a ballpoint pen in half to make the two springs required. Drop 5/16 inch steel washers (they have 3/8 inch holes!) over the dowels and sit the spring-loaded paddle on top of them. If the paddle tends to "walk" up the pivot dowel when in use, a small elastic band twisted two or three times around the dowel above the paddle will hold it down. Glue or screw the pillars in place, lining up their contact screws with the matching screws in the paddle

arms. Connect the small-gauge stranded-wire leads and you are done.

### Adjustment

The stroke (travel) of each arm is adjusted by the screws in each pillar. The easiest way to set the gap is by using a spark plug feeler gauge or a piece of thin cardboard. The resistive "feel" of the paddles is adjusted by the nut on the screw holding the springs. Since the spring assembly is free-floating, the pressure is the same on each arm, even if the two springs are not exactly identical. No lubrication is required at the pivot dowel because the arms do not rotate about the dowel; they just sort of see-saw at the point of contact. This is because the radius of the grooves in the arms is greater than the radius of the pivot dowel.

### Frills and Fripperies

You may want to add a weighted base,

mounting holes, or a leg strap for mobile use. I just stick my Tuppenny Paddle to everything with double-sided adhesive tape. A nice finishing touch would be proper binding posts for the wires. For a Super-Deluxe version you could even glue a dime on top of each dowel.

### And Finally . . .

Remember the clothespin spring? Don't throw it away. According to my HAM-CALC computer software, it has an inductance of 14.739 nH, which, paralleled with an 82.88 pF capacitor, resonates at 144 000 MHz. Keep the spring in the same parts bin as your 82.88 pF capacitors in case some day you need a 2 meter trap for a VHF trap dipole. Send me \$5.00 and I will send you a free copy of HAMCALC version 32, a 3 1/2 inch DOS/Windows diskette containing more than 200 programs for amateur and professional radio buffs. ■



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