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Build the ZL Paddle

—brass with class

After gaining my New Zealand Post Office Grade 2 license, I decided to set myself up for CW as the license gave me 160m, 80m, 6m, and 2m, plus several other frequencies and most modes.

I had recently built a keyer and looked at the possibility of building a paddle key. After reading several magazine articles concerned with both CW and paddle keys, I came up with this design which is a mixture of several other designs.

I was extremely pleased with the prototype and gave it to my father, Fred ZL2AMJ, who used it to make CW tapes for some beginners who are now hams. The second key built, which was a little more advanced than the first, I gave to my uncle, Hugh ZL2BHK. After this, I got paddle key-making down to a fine art.

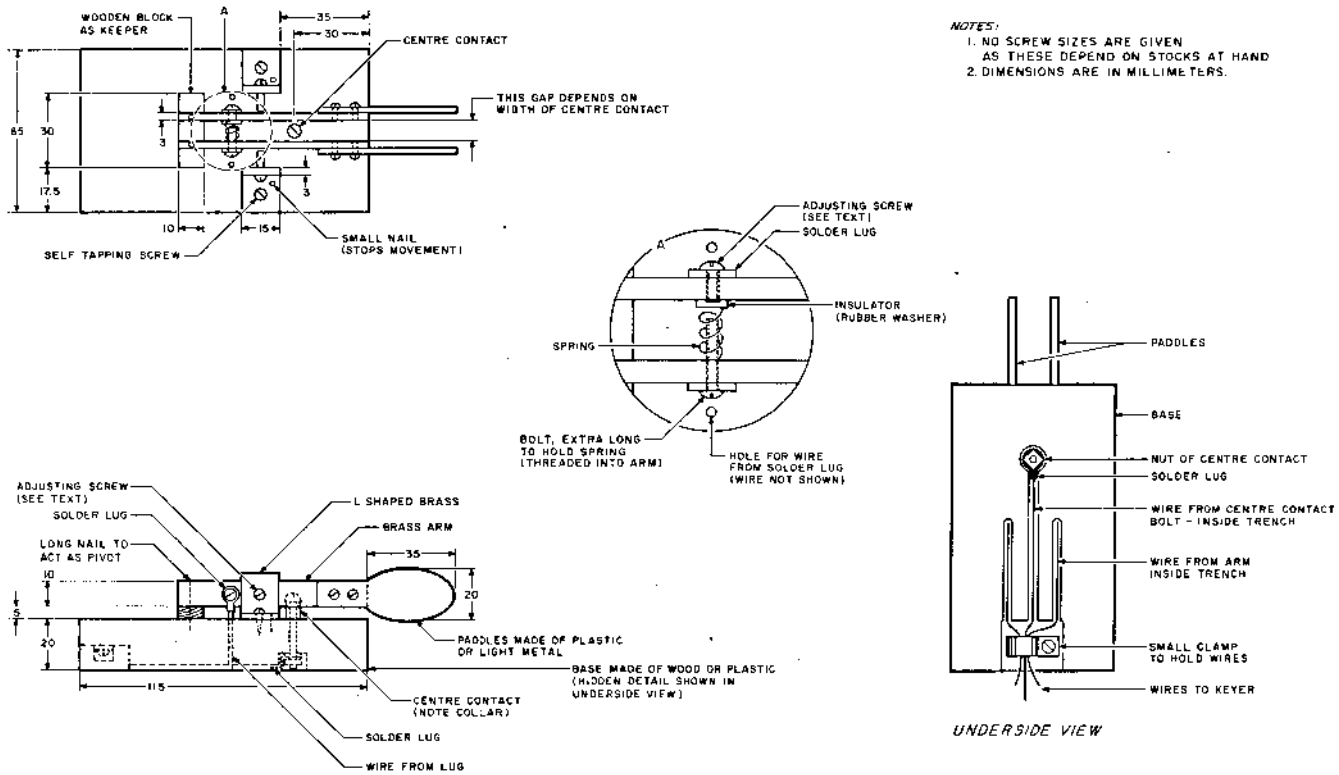

Fig. 1. A simple paddle key.

Construction Details

It is an easy key to build and anyone with a slight knowledge of metalwork should be able to produce a key to be proud of.

Perhaps the hardest part of the construction is the drilling of the vertical holes through the ends of the arms. To do this, a vise or a jig must be used to hold the arm straight, and the drill bit should be put in a drill press to keep the hole vertical. Also, with most of the holes, a center-purch hole must be punched to guide the drill. Note also that it may be necessary to put hexagonal nuts on the adjusting Ls.

The method of wiring is but one of many and can easily be changed to suit your own desires. The spring used came out of a ballpoint pen. Note also that the center contact has a collar around it, and that the contact's head is round.

The base is made extra long so that a clamp or other fastener can be used—or the wires going to the keyer can be wound around it. If the key were being used in a permanent situation, then the extra length of base could be cut off and the key screwed or nailed down.

Finishing Details

When finished, it is a good idea to take the key apart, clean all the brass with either steel wool or some type of chemical cleaner, and then spray with clear lacquer to hold fast the shine. The base can be painted or varnished, depending on the type of material used. A plastic frame or box over the key will protect it from dust.

So have fun, and you can end up with the proper end product which people will admire. ■

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Repeater Time-Out Warning

— put time on your side (relatively speaking)

In the November, 1978, issue of *73*, there was an article by WB4CEO describing some circuits using the 555 integrated circuit timer chip. After reading his article, it occurred to me that this IC could be utilized for a useful circuit for amateurs who operate through repeaters on 2m FM. Using three 555 chips (or one 555 and one 556), it is possible to build a circuit that would warn an operator when the time-out circuitry of the repeater is about to drop the repeater carrier.

This article will describe a circuit for this purpose, giving details of its operation and an explanation of how each 555 chip is interfaced with the others. This time-out warning circuit has an adjustable timing interval so that it can be used on different repeaters, and is operated from a nine-volt battery.

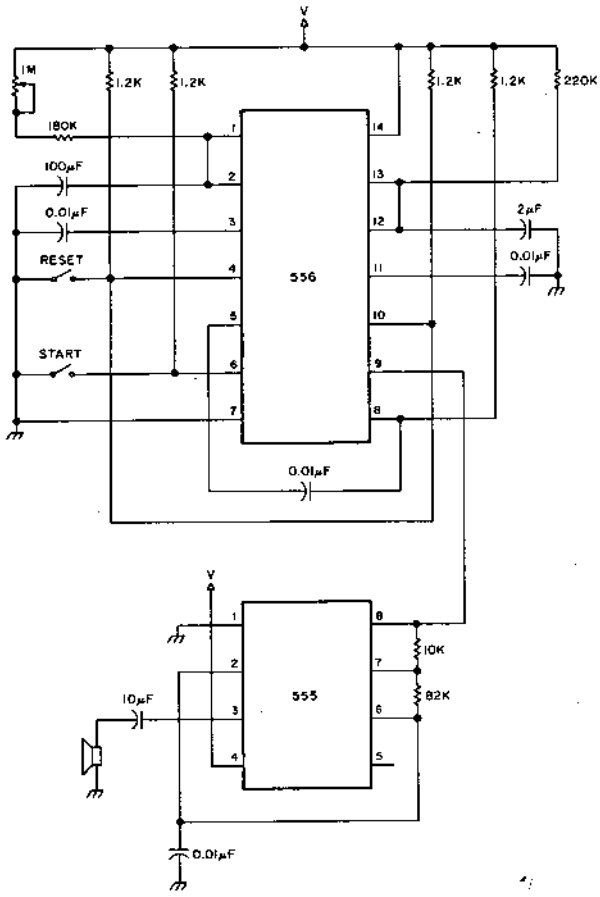

Fig. 1.

The time-out warning circuit consists of three parts, each using one 555 timer chip. The first timer chip measures a specific time interval which has been adjusted to be slightly less than the timer interval of the repeater. At the end of this interval, a pulse is generated which triggers a second timer circuit. The second timer supplies power to an audio oscillator (the third 555 chip) for a short, fixed duration. the result is a short audio tone at the end of a time interval specified by the operator. The entire circuit requires only a handful of parts, and can be assembled for under five dollars.

The actual circuit for a 30-second to 3-minute adjustable timing interval is shown in Fig. 1. This version of the circuit uses one 556 and one 555, but the same circuit can be obtained by using three 555 chips. The circuit of Fig. 1 works as follows: The operator presses a momentary-contact SPST switch (START) connected to pin 6 of the 556 chip (trigger). This begins the timing interval of the monostable multivibrator built from the left side of the 556 chip. During the timing interval, the normally low output of the multivibrator (pin 5) is high. The timing interval is determined by the RC combination of the 100-uF capacitor and the 180k resistor and 1 megohm potentiometer. For this combination of values, the interval is variable between 25 and 175 seconds. The output (pin 5) of this part of the circuit is shown in Fig. 2.

The right side of the 556 chip is also in a monostable multivibrator configuration and serves as the driver for the audio oscillator. The output of this multivibrator has a fixed-interval duration of slightly greater than 0.6 seconds. This duration is determined by the 2-uF capacitor and the 220k resistor. The trigger input (pin 8) for this multivibrator is taken from the output of the first multivibrator through a 0.01-uF capacitor. The voltage waveform of pin 8 is shown also in Fig. 2. The