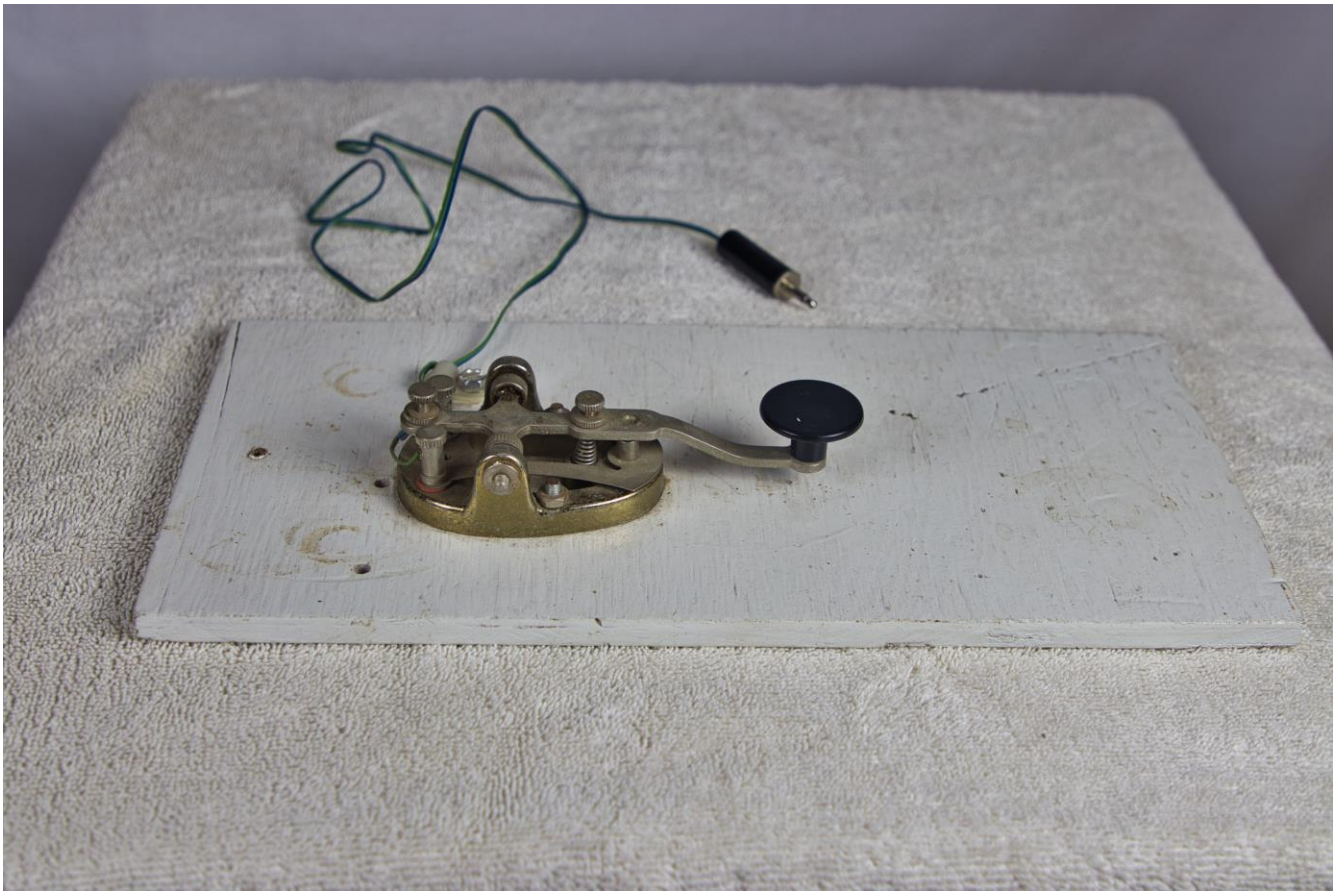
My Old Key

How many of you use something that is over a 100 years old; weekly, monthly or even once a decade? And it does the job better than one of them new fandangle ones.

Picture 1.

Well this is my Morse code key. It's over a 100 years old and it does the job, and it does it better than many news Morse code keys. It's called a camelback key because of the hump in the lever arm by the contacts.

Why, is it better, you might ask? It has platinum contacts. The contacts may be tiny but there's still good after a hundred years. And they don't corrode it the salt air I have living so close to the ocean.



Picture 2

The Radio Shack key I bought back in the 1970s doesn't do as well. Every month or so I have to take a heavy piece of paper, stick the paper between the key's contacts, close the key and pull the paper back and forth to burnish the contacts to get the crud out.

Picture 3.

So let's talk telegraph keys. In the Smithsonian Institution there is a telegraph key that belonged Alfred Vail. Mr. Vail was a mechanical engineer that worked with Morse to develop the American telegraph. (the British beat us). Mr. Vail is often credited with developing the American version of the Morse Code.

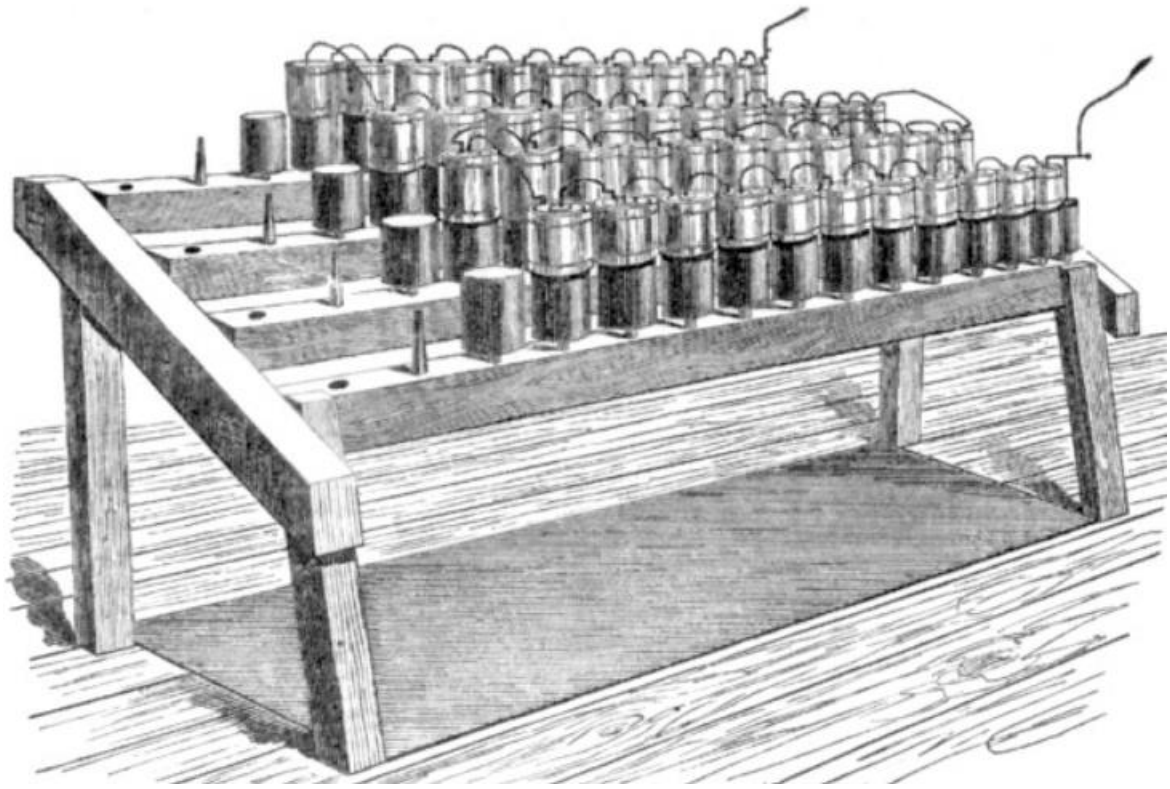
Back story. Mr. Morse code was really a code. Like the ones they used on semaphore or optical telegraphs in England and Europe, he was going to use 3 or 4 number groups to represent a word. This created a code book that you would need to decode the message. Mr. Vail referred to these code books as dictionaries. An old desk dictionary contains 30 thousands words. The big trouble with this is our country is made up of people with names are from different languages. Even many cities in the US have name from different languages. The code book or dictionary would have been huge.

Vail Finger Key
Reproduction of original version

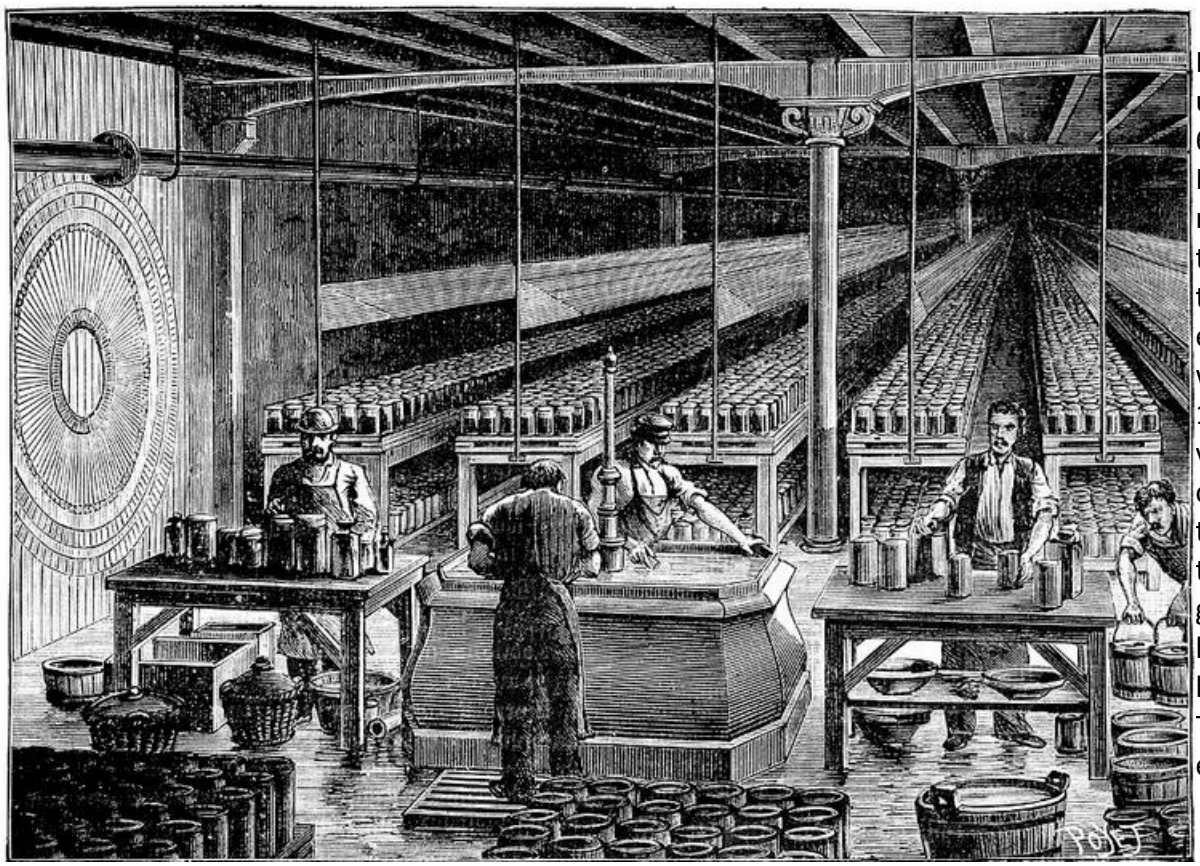
Picture 4.

The first American telegraph key, that no longer exists. The above is claimed to be a reproduction of the telegraph key used for the test transmission between Baltimore and Washington D.C. As you can see it is a piece of brass sheet that you would push down onto a brass contact. There are two things wrong with this. One; the wire they used was sometimes iron, because it was cheaper than copper, and the insulators they used were not very good. So they had to over come the loss in the wire and the leakage in the insulators with voltage.

This brought up problem number two. A late 1800 telegraph office used a wet cell batteries. Lots of them.



Picture 5
These wet cells were sometime took up a big room.



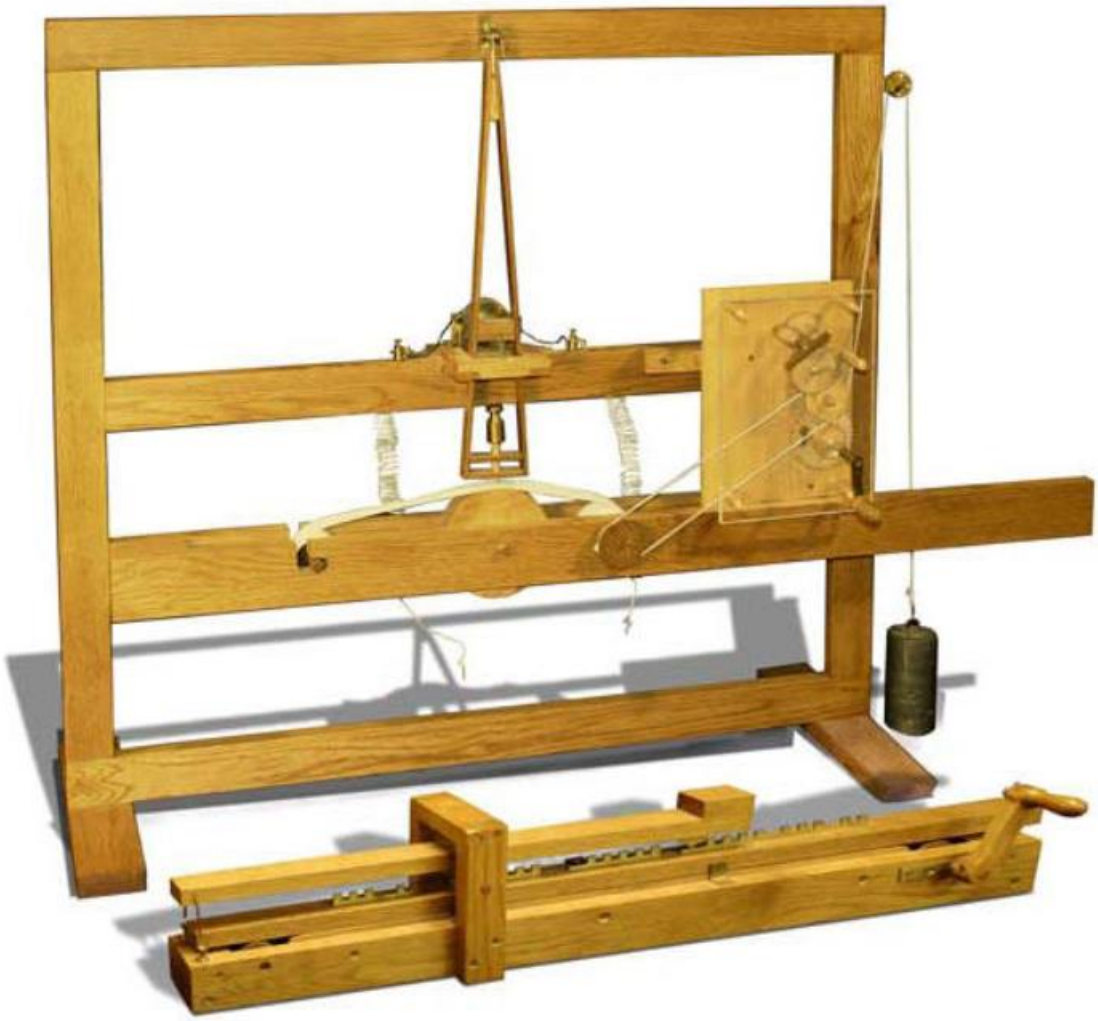
Picture 6. I've read that there was 130 volts on the telegraph line. The each

cells generated about 2 volts and it would take about 60 cells to make 130 volts. One battery bank for each telegraph line.

The brass sheet of the 1840s does not make a very good spring. You would have to keep bending it back into shape after a little use. The early keys did not have an insulated knob on the lever or brass strip. If the wires get the wires crossed and you are touching a brass strip with 130 volts DC on it.

Picture 3.

The key in the Smithsonian is more like a telegraph key we have today. There is no record who built the key, but it was in the material belonging to Mr. Vail that was donated to the Smithsonian by his son, and Mr. Vail was a mechanical engineer.



Picture 7
Mr. Morse was a painter and many of his early model were mostly wood. This is a reproduction of one of Mr. Morse's prototype. The rack drawn assembly in the foreground is the sending unit. Mr. Morse called the sending units correspondents. It is designed to feed in pre cut blocks of wood. Each block is a letter of the Morse/Vail code. This is similar to setting type in a printing press. It is slow to assemble.

Picture 3

Why do they call it a telegraph key? There is a statement that Mr. Vail made where he said the device worked "in much the same manner as a key closes a door”. Yet Morse and Vail, in their writings called the device a correspondent, after what earlier sending devices were called.

Picture 8

My theory is the name came from a German device. In the 1840s there were no CDs, streaming media, or even record players. They hadn't been invented yet. Almost everyone could sing and most could play an instrument. Sitting around the fireplace and singing was a big thing.

That brings us to picture number 8. Hughes telegraph, an early (1855) teleprinter built by Siemens and Halske.

If you look closely it has keys just like a Horpsichord.

Picture 9.

Now getting back to my old key. Why the hump? They were cheap back in those days. Why did they waste metal to make a hump? The telegraph system used 130 volts DC. Whole rooms were filled with batteries, or in the civil war it took a big horse drawn wagon filled with batteries to power a telegraph. In the picture above, the operators were in the tent and the batteries were in the covered wagon. I don't know how long the wagon lasted with nitric acid fumes from the batteries filling the wagon

European Camelback Key
Mid 19th Century

Picture 10.

When you let up on the telegraph key you could draw a spark. This is a DC spark. There's no crossing zero volts to quench the spark. My theory is the heat from the spark pushed the spark up the inside of the hump, making the spark longer until it goes out.

Other theories say the hump made the key faster, easier to use. The old JH Bunnell & co. key I have is two thirds the size of most earlier keys. It's shorter and has less throw. So it is easier to use.

Picture 9.

Of course the key I have is an example of Yankee ingenuity (cheapness). The key in the foreground is dated from around the 1850s. You can see it's bigger. The lever arm of the bigger key take more pushing (distance) to make contact. The lever arm on my key is also much smaller and massive. Both those things make for the litter key to be quicker and easier to use. It also means that the smaller key uses a lot less brass to make.

OK another side note. You every wonder why there's use 120 volts at the wall socket in your house.

Edison made the money that he used to build his Menlo Park laboratory form the patents on telegraph inventions he made. One of the big patents was for the multiplex or phantom line telegraph.

So Edison know about telegraphs and about 130 volts DC. And equipment was made for 130 volt DC circuits. When he went on to develop the light bulb he used that knowledge and the existing infrastructure. One problem with DC is by the time the power got to the place where it was going to

be used there was a big voltage drop. The voltage could be down to 105 to 95 volts. When General Electric took over from Edison, they switched to AC, but they inherited the 130/120 volts from Edison.

And if you look at the name plate of an old 1960s or 1950 house appliance you'll see that it marked 105 or even 100 volts.