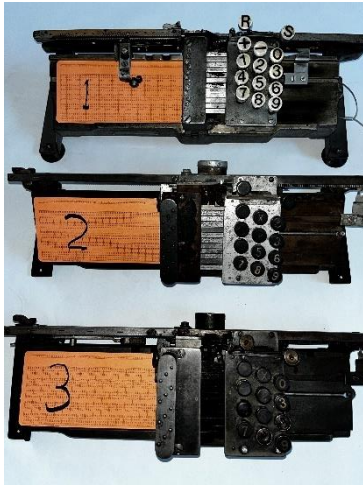


Manual keypunch restoration report 2-3-2024

A few months ago, Frank and I discussed our three 001 keypunch machines.



Number 1 is our punch, 2 and 3 are verifiers. At that time the punch was not punching and we had no need for verifiers. Frank wondered if I might fix the punch, and I wondered if a verifier could be converted to a punch. I borrowed all three machines so I could work on them in my home lab. I started by disassembling machine 3. In this report I will skip over a few months of learning and testing.



The good news is that we can now punch cards and create a chad mess. It is also possible to convert the verifiers into punches. A reliable Release function has not yet been restored.

We have not located a CE maintenance manual or operating instructions for these machines. Recently a parts catalog for an IBM 001 keypunch machine was located. This is the most helpful document in the search for a reliable Release function.



The Release function is implemented by setting a mechanical latch which lifts an escapement pawl holding the carriage. When the pawl is lifted a spring returns the carriage to column 1. The latch and pawl are reset end of travel. At this point the escapement is in its normal state, controlling the movement of the carriage one column with each button press.

There is a second mechanical toggle (“minus key interlock”) that enables the Release lever to initiate the movement in the first place. The minus key punches the 11 zone hole and flips a toggle enabling the release function. Release only works if pressed immediately after the minus key because any other punch key resets the toggle.

The Release function works much of the time, however its design is such that if the first latch is not reset or the enabling toggle is slightly off, the carriage will not move. When the device is in this state is difficult to restore to working order.

This is a closeup of the various mechanical components that are involved in incrementing and releasing the carriage. The “minus key interlock” adds a huge complexity to this portion of the machine.



When the device is configured as verifier, one of the parts (skiplever item 35) is $\frac{1}{4}$ " longer and eliminates the interlock completely. This longer part also avoids a tolerance issue in the toggle logic.

I am sort of stuck with the question of why this minus key interlock was developed.

Ken and I discussed this and his belief was that there could be something in the programming of unit record equipment that led to the need for "minus key interlock".

John

PS that last paragraph was improved/created by some magic AI option in Word. However, another part of Word thinks there should be a comma after "this". I am gonna be replaced by AI land leave it alone, next report I will try more AI help.