

CLASS: Cipher Machine (Electro-mechanical)
 SYSTEM: Monographic Substitution, Polyalphabetic (Related Sequences)
 METHOD: Single Circuit Rotor, Non-reciprocal Wiring, Manual Stepping

NAME: Hebern "Midget Coder"

DEVELOPMENT:

Invented by Edward H. Hebern, assignor to International Code Machine Company of Reno, Nevada. Application for patent filed in the United States, 17 May 1927. No evidence that this machine was ever manufactured commercially has been found.

PATENTS:

U. S. 1,861,857 (E. H. Hebern, 7 June 1932, Cl. 197-4). The "Midget Coder" is one of three circuit rotor machines described in this patent.

DESCRIPTION:

A small, battery operated, non-printing cipher machine employing a single random-wired circuit rotor which is stepped manually by the operator, either regularly or according to some predetermined scheme.

The apparatus consists of a metal base frame on which an outer circle of twenty-six lamps and an inner circle of twenty-six push-button contacts are arranged, and within which a circuit rotor is mounted. The lamps are covered by interchangeable glass windows, each having a letter of the alphabet etched thereon. The rotor has two sets of fifty-two contact points each, arranged in two concentric circles on its upper face and cross-connected in sets of four. The fifty-two contacts in the inner circle are equivalent to the contacts on the two faces of a conventional rotor, and are similarly random-wired in pairs. The outer circle of contact points is in register with the lamp bases and the inner circle of contact points is in register with the push buttons. Thus, the cross-connections between sets of contact points constitute an encipher-decipher switch.

The rotor has a battery mounted within it and may be turned manually by means of a bar-shaped index pointer fixed to its hub. When the index pointer is positioned directly over any one lamp and a given push button is depressed, a circuit is made from battery via the closed push-button contact through the rotor to one of the lamps and back through the frame to battery. If the rotor is then moved forward half a step so that the index pointer lies between two lamps, the circuit path through the rotor is reversed, and if the push button associated with the lamp which was illuminated during encipherment is depressed, the lamp which represents the original plain-text signal will light. Thus, for encipherment the index pointer is moved to positions directly over the lamps and for decipherment to positions half way between lamps (or vice versa).

Variable keying elements include the rotor wiring (which may be changed at will), the arrangement of the interchangeable letter windows, the rule adopted for manually stepping the rotor, and the initial setting of the index pointer for a particular message encryption.