



We are not sure, but this may be a photo of the only machine of its kind in existence. That is, this may be the only Piersen Telegraph Transmitter that was ever constructed. This is a most ingenious piece of apparatus, and don't we wish we had one in our shack!

A Telegraph Key With a Memory

BY HARRY R. HABIG, *K8ANV

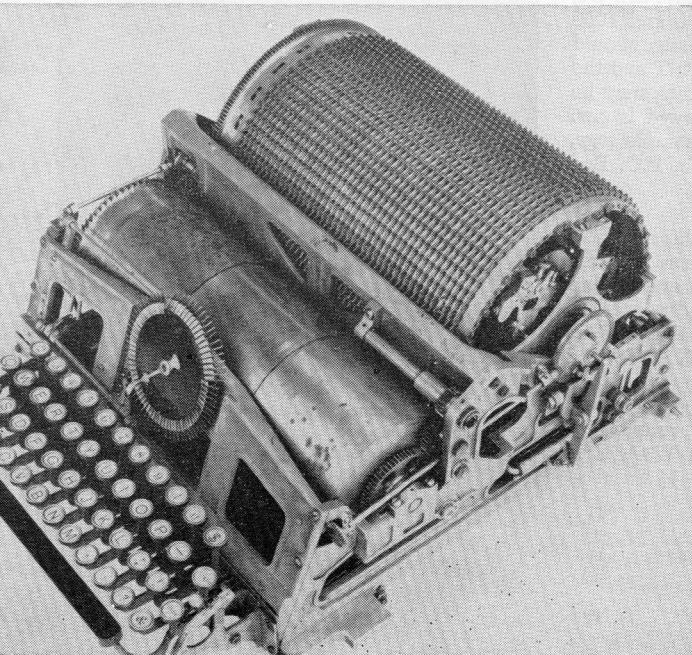
TODAY, with all the advancements in electronic keyers, it may come as a surprise to many that an automatic Morse telegraph keyer, featuring a mechanical memory drum containing 3240 memory bits, was available over 50 years ago — long before the advent of Kleinschmidt perforators, tape recorders or electronic bugs.

Designed and manufactured by Edwin H. Piersen of the Piersen Telegraph Company, Topeka, Kansas, in 1910, this amazing mechanical brain boasts the most modern appearance and precision workmanship of the latest teletype ma-

chine or electric typewriter — but it uses neither tape nor electricity in its operation.

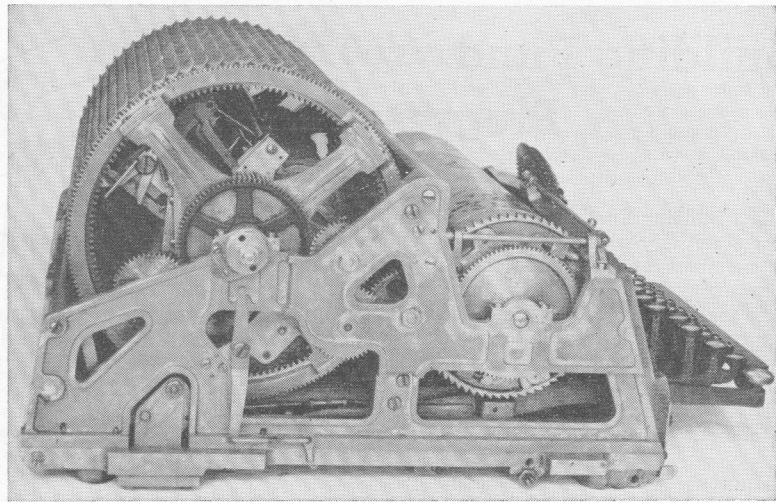
Equipped with a standard typewriter keyboard and a spring drive motor, somewhat like the old Victrolas of our grandfather's day, the operator only had to wind the spring, connect the output of the keyer to his hand-key connections, and start typing his message. The Morse telegraphy emitted by the machine at a preset speed was perfect in every respect — perfect dots and dashes, and perfect spacing between characters and words. All the typing operator had to do was stay ahead of the machine — as much as 72 characters ahead of it, in fact — and keep the

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This view shows very clearly the drum which has the 3240 "fingers." The spring motor is in the drum just forward of the keyboard, its torque being transmitted to the memory drum through the gears which are visible in this and the side view photo. The dial above the keyboard indicates to the operator how far ahead he is — how many characters are stored up in the drum and not yet transmitted.

This side view of the Piersen Telegraph Machine shows the beautiful machine work that went into its construction and the gearing that transmits the torque from the spring motor to accomplish the functions.



spring wound. But the machine was capable of producing hundreds of words of perfect telegraphy before the spring motor would require rewinding. A good typist, however, typing faster than the machine was transmitting, could store enough characters in the memory drum to stop typing, rewind the spring, and resume typing while the keyer emitted a constant flow of Morse.

How was it done? How could man invent a mechanical brain decades before magnetic tape was a gleam in the inventor's eye?

A modest-sized but beautifully complex drum with 3240 "fingers" is the heart of the machine. Each finger is an alphabetic character or numeral, and the characters are arranged in 45 rows of 72 fingers each; thus there are 72 "A's," 72 "B's," 72 "C's," etc. Referring to the diagram, the memory drum has a constant counter-clockwise torque applied by the spring motor at all times, while the transmitter assembly has a constant torque in the opposite direction. When a keyboard key is pressed, the single revolution escapements "E" and "E2" allow the drum or the transmitter to move one pitch when released. The pinion is rotated at a constant speed, selected and preset by a control on the keyboard. Of course, this complete assembly, illustrated in the abbreviated drawing, is repeated 45 times, once for each character.

A dial on the face of the machine — containing 72 marks around its perimeter, a fixed index mark attached to the dial bezel and a hand centered in the dial pointing to the fixed index mark — informs the operator at any instant how much storage space is available in the memory drum and how far the transmitter has to go before reaching the end of the message. Each time a key is pressed, the dial and hand, as a unit, rotate one mark counter-clockwise, thus showing the num-

ber of characters the operator has recorded. When the operator activates the transmitter the pointer only revolves clockwise, one mark for each Morse character transmitted, thus indicating how far from the home or starting position the transmitter is at any instant, and at the same time informing the operator how much storage space remains in the drum, available for use. The operator need type only as fast as the machine is transmitting, or he can keep as many as 72 characters ahead of the output, as long as the pointer is kept suspended off home base and until the spring motor requires rewinding.

This incredible gadget, a miracle of design and machining in any age, was exhibited and was awarded the Grand Prix at the Panama-Pacific Exposition in San Francisco in 1915. I am indebted to Mr. Robert W. Richmond of the Kansas State Historical Society for his assistance in obtaining historical information about the machine and its manufacturer from the archives of Topeka newspapers. I believe that the machine on exhibit in the Kansas State Historical Society is the only one in existence, but would appreciate hearing from anyone who knows anything of the present whereabouts of other models of the Piersen Telegraph Machine.

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A simplified diagram of how the Piersen Telegraph Machine operates. Follow the text and you'll see how it worked. The inventor was a clever man indeed!

