

Written for THE INLAND PRINTER.

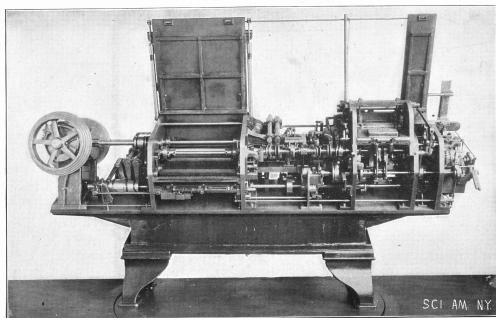
### COMPOSING MACHINES—PAST AND PRESENT.

NO. V.—BY JOHN S. THOMPSON.

PERHAPS the most wonderful typesetting machine ever invented was the Paige Compositor, the product of the brain of James W. Paige, of Hartford, Connecticut. Certainly no machine has a more interesting history. Mr. Paige first conceived the idea for his typesetting machine in 1873, and in the following year he completed a composing machine, without provision for justification or distribution. He then constructed an independent distributor. In 1881 a combined setter and distributor was completed, the Thompson distributing apparatus being used. In 1887 another machine was constructed in which was incorporated an automatic justifying device. In 1892 the

drawings. Examiners from the Patent Office were sent to Chicago, where a month was spent examining the working machine. This was an almost unheard-of proceeding. There were no less than 18,000 separate parts, with about eight hundred shaft bearings, with cams and springs innumerable.

Three patents were issued in 1895, one pertaining to the justifying apparatus, of which Charles R. North was joint inventor. The three patents contained 275 sheets of drawings, 123 sheets of specifications and 613 claims, all of which are now owned by the Mergenthaler Linotype Company. The application was filed in 1887 and was pending eight years, mainly owing to the work of examination by the Patent Office. One of the examiners died while the case was pending, another died insane, while the patent attorney who originally pre-



THE PAIGE COMPOSITOR.

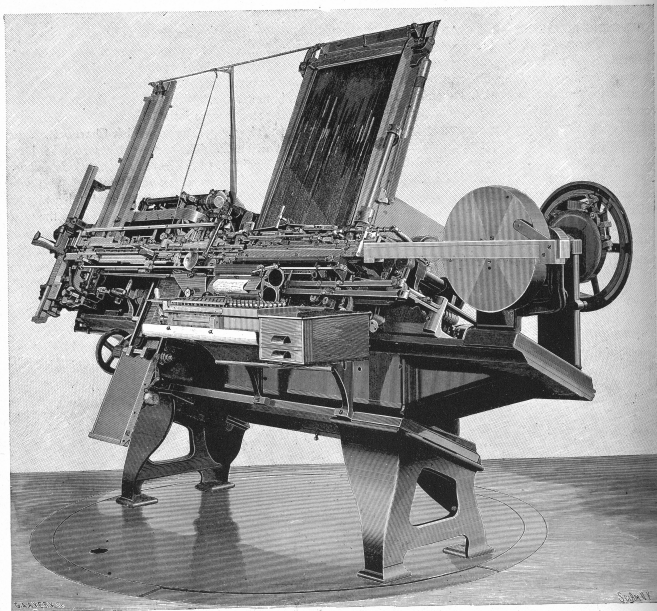
Back view, showing complicated mechanism.

apparatus was removed to Chicago, and two years later work was started on a commercial machine, which was installed in the office of the Chicago *Herald* in 1894. After several months' trial, during which time the machine was again partially reconstructed, work was abandoned, and the apparatus, purchased by President P. T. Dodge, of the Mergenthaler Linotype Company, was presented to Columbia University, the earlier Paige machine going to Cornell University, at Ithaca, New York.

Before the first Paige machine was constructed the promoters had spent \$1,300,000. Probably another million was expended before the end came. Mark Twain was bankrupted by investing in Paige machine stock. The history of the Paige patents is unique. The first application filed contained 204 sheets of drawings, with over a thousand separate views. It is said the attorney who first prepared the case received a fee of \$10,000 with an allowance of \$2,000 extra to pay for

pared the case also died in an insane asylum. It is estimated that the first edition of the Paige patents cost the Government \$6 each, and the total cost of issuing the patents more than \$1,000. The legal fees of the Government were only \$35 on each patent and copies must be sold at 10 cents each.

In every way the Paige was a most remarkable piece of mechanism. Its complications were such as to demand the attendance of experts, and the impossibility of training mechanics to the degree of skill required made it a commercial impossibility. To appreciate the completeness of the mechanical work of the Paige Compositor it is only necessary to recite its accomplishments. The keyboard alone was the result of ten years of study, its 109 characters being so arranged as to permit whole words to be conveniently assembled at one stroke of the keys. The operator used every finger of both hands and brought down whole words at a time. Averages of 12,000 ems per



THE PAIGE COMPOSITOR.

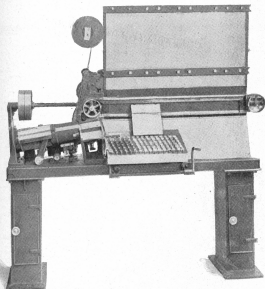
The most wonderful typesetting machine ever constructed.

hour were frequently made by operators who had but little experience. At the end of each word a word key was struck, and at the end of the line a line key was pressed, the operator immediately proceeding with composition, the machine meanwhile measuring the space occupied by each word, forwarding the line to the justifying mechanism, dividing the space in the line not occupied by words into the proper number of spaces, and inserting the spaces to accurately justify the line before pushing the line on to a receiving galley, leaded or solid, as desired. Eleven different sizes of spaces were used in justifying. Meanwhile distribution proceeded undisturbed. Three columns of dead matter could be placed on the distributing table beneath the machine at one time, with leads and rules extracted. A line at a time was forwarded to a testing mechanism, where all defective type was discarded. A selecting mechanism next removed any type turned or inverted, and all irregular characters, such as accents, reference

marks, etc. The remaining type were advanced to their proper channels in the composing section of the machine, the spaces going to the justifying section. Distribution and composition proceeded simultaneously without interference, the type entering the channels at the bottom and being pushed upward, the assembled types leaving the channels about two inches above. The distributor would handle the type wet or dry, clean or dirty, the distribution being stopped when any channel was full. Specially nicked type was used to accomplish distribution. Finally the machine measured the type set and a dial indicated the amount. Automatic stops locked every working part of the machine whenever any part was not in working order. Every movement was a positive mechanical one, there being no carrier belts or gravity devices. The model machines constructed were built for handling but one size of type, though the machine could easily have been made interchangeable. The Paige Compositor, nine feet long and weighing

over three tons, was run by a quarter-inch round belt and required but one-twelfth horse-power.

A new model of type composing machine was introduced by Paul F. Cox, of Battle Creek, Michigan, in 1894. The novelty consisted in using corrugated spaces



THE COX TYPESETTING MACHINE.

to accomplish justification of the composed lines of type. Three separate machines were required with the Cox method: a composer, a space and lead discarder, and a distributor. The composing machine had a number of vertical type channels, from which the type was ejected, by the operation of the keyboard, on to a carrier belt, which conveyed the letters to the assembling

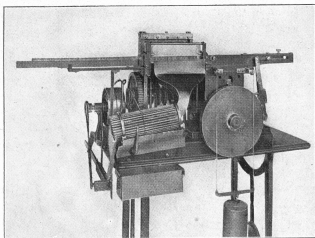


THE COX DISTRIBUTING MACHINE.

point. Above the assembler a reel of soft metal ribbon was mounted, the operation of the space key causing a section of this ribbon to be unwound, crimped, cut off, and dropped into the line between the words as composition proceeded. It was also proposed to use cast crimped spaces in this machine. The line was overset and when complete a lever to the right of the keyboard was depressed, throwing the machine into action. A small cylinder containing a number of slots, in one of which the line was assembled, now revolved, side pres-

sure was applied and the line brought to the proper length by compressing the crimped spaces, another slot in the cylinder meanwhile being presented to the assembler for the reception of another composed line, the next partial revolution of the cylinder bringing the justified line to the galley, where the line was ejected, leaded or solid as desired. One size of type only could be composed on the Cox machine, the range of justification being from a thin space to about an en quad in thickness. Any length of line from thirteen to twenty-six ems could be composed. A speed of four thousand ems per hour was claimed for the composing machine.

Before being placed in the distributing machine, type set on the Cox machine was run through a lead and space discarding apparatus. This machine separated the type line by line and removed the leads, if



THE COX SPACE-DISCARDER AND LEAD-EJECTOR.

any. The line was then fed along to the quad and space discarder, feelers inserting themselves over the tops of quads and spaces and forcing them down and out of the line. The type then passed into a long channel, from whence it was taken and placed in the distributing machine. The discarded quads were separated from the crimped spaces and assembled in a channel ready for the composing machine. One discarder was capable of handling dead matter for three distributing machines, its speed being thirty thousand ems per hour.

The distributing machine was a combination of Thorne and McMillan distributors. Channels of type from the discarding machine were placed on end in upright channels of the cylindrical distributor. The type was specially nicked, and as the cylinder revolved the type was distributed into type channels which radiated from the lower end of the cylinder, which channels were then removed and placed in the composing machine. Duplicate channels for the letters most used enabled distribution to be done rapidly. One distributor was sufficient to supply two or more composing machines.

Several Cox machines were placed in use, but upon the absorption of the Cox patents by the Unitytype Company they were withdrawn.

(To be continued.)