

INVENTION

The Linotype

"A Classic Invention"

**Though Taking Its Name From Another of Its Machines
Our Daily Press Owes Its Being Also to the Linotype**

MACHINE FOR PRODUCING LINOTYPES, TYPE-MATRICES, &C. Ottmar Mergenthaler, of Baltimore, Maryland. Specification forming part of Letters Patent No. 436,532, dated September 16, 1890. [First Patent on the linotype No. 317,828, dated May 12, 1885.] This is an exact reprint of extracts from the 1890 patent.

To all whom it may concern.

BE IT KNOWN that I, OTTMAR MERGENTHALER, of Baltimore, Maryland, have invented certain improvements in Machines for Producing Linotypes, Type-Matrices, &c, of which the following is a specification.

The present invention relates to a machine for producing what are known in the art as "linotypes"—that is to say, bars for types, each having on one edge the characters necessary to print an entire line of a page or column.

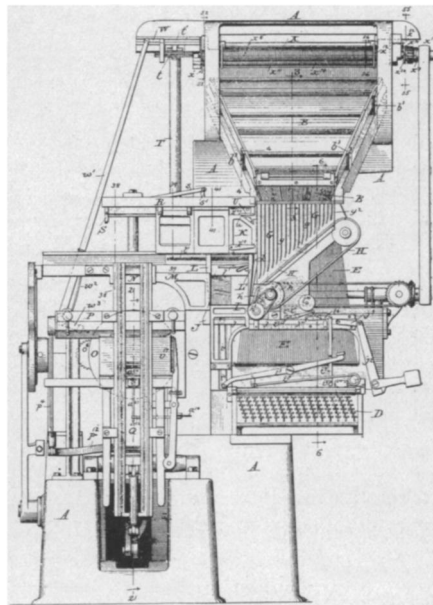
The present machine is of the same general character as those represented in numerous Letters Patent heretofore granted to me—such, for example, as Patent No. 317,828, dated May 12, 1885, and No. 378,798, dated February 28, 1888, but more particularly to that form of machine represented in my application for Letters Patent of the United States filed on the 15th day of March 1889, Serial No. 303,396.

Like its predecessors, the present machine contains as its fundamental features a series of independent female type or matrices and a series of space-bars. The matrices and space-bars properly assorted are contained in magazines or holders. A series of finger-keys representing the respective characters and the space-bars act, in connection with suitable composing mechanism, to assemble the matrices in line in the order in which they are to appear in print, and also to introduce the spaces at

The Linotype was patented two years earlier than the other great typesetting machine, the Lanson Monotype, which will appear soon as another Classic Invention.

suitable points in the line. After the matrices and spaces for an entire line are assembled a shifting mechanism transfers them to the front of a mold, the internal form and dimensions of which correspond with those of the required linotype. While the line is thus located in front of the mold suitable clamping devices act thereon and the space-bars are advanced through the line, so as to "justify" the same. A melting-pot containing constantly a large body of molten metal is arranged to close the mold on the rear side, and at the proper moment a pump in this pot acts to deliver the molten metal into the mold, where it solidifies and produces a linotype, which receives on its edge the impression of the matrices at the front. As soon as this casting operation is completed the clamps lift the matrices from the front and the space-bars are then separated mechanically from the matrices and return to the magazine from which they started, while the matrices are carried to a distributing mechanism at the top of the machine, where they are assorted and returned to the upper ends of the appropriate magazine-tubes. After the removal of the matrices therefrom the mold makes a partial revolution and an ejecting device delivers the linotype therefrom to a galley or receiver. It will be observed that the matrices and space-bars are first assembled, then presented to the mold, and finally returned to the points from which they started, to be again used. The operations of assembling or composing one line of casting from the preceding line and of distributing a third line are carried on concurrently and independently.

The present invention relates to various improvements in the construction of the magazines; in the escapement devices for delivering the matrices from the magazine; in a finger-key mechanism and mechanical devices to continue the action of the finger-keys if they are not fully depressed by the operator; in



INVENTOR'S DRAWING

of the complete linotype machine which sets the type molds, and redistributes them, after casting metal type in them, a line at a time.

various details of the shifting or transferring mechanism by which the assembled line is presented to the mold; in means for separating the matrices from the space-bars and transferring the matrices to the distributing mechanism, and in various details connected with the distributor.

In the drawings, Figure 1 is a front elevation of my complete machine.

General organization.—A represents a rigid main frame, which may be of any form or construction adapted to sustain the operative parts herein described.

B is the magazine in which the assorted matrices are contained.

D are finger-keys representing the respective letters or characters, and connected by rods E with the escapement mechanism located in the mouth of the magazine to deliver the matrices one at a time therefrom.

G G are a series of upright slots or channels through which the matrices descend.

H is an inclined traveling belt on

which the matrices are received and by which they are delivered to the vertically-movable assembling-block I, against a yielding resistant J.

K is a reservoir or receptacle in which the space-bars are held, and from which they are dropped, one at a time, into the assembling-block I.

LL' are transferring or shifting arms, which carry the matrices from the elevated assembling-block through a stationary guide-block M to a vertically-movable yoke N, by which they are first lowered to the vertical mold-wheel O, and thereafter lifted within reach of the assorting devices.

P is the "vise," so called, a frame supporting the matrix-clamps and sliding mechanism Q operating the space-bars.

R are stationary rails or supports to receive the line of matrices and space-bars.

S is a slide to transfer said line to said rails from the yoke N after the latter is elevated.

T is a vertically-swinging arm provided with means for lifting the matrices from the rail R to the distributor, leaving the space-bars behind.

U is a device for carrying the space-bars from the rails into their receptacle or magazine K.

W is a slide at the top of the machine to carry the matrices from the lifting device T into the distributor X, whence they return to the magazine.

Operation.—The machine is operated as follows: The attendant depressing successively the finger-keys, which represent the required characters, thereby causes the matrices to be discharged from the mouth of the magazine B, whence they descend through the channel G to the belt H, by which they are delivered one after another in an upright position side by side into the assembling-block I, in which they are advanced in close order by the rotary block b^2 acting against the last matrix. From time to time space-bars are delivered into the line by means of the appropriate

finger-key. After the composition of the line is completed the assembling-block I is lifted and the line of matrices thereby carried within the grasp of the shifter-arms LL', which immediately carry the matrices to the left through the guide M into the yoke N, which at once descends with them to the front of the mold, which assumes its normal position. As soon as the matrix-line has completed its descent, the mold moves forward toward the matrices. The first steps in the justification—that is to say, in the lifting of the space-bars—now occur. It is frequently desirable to have the machine cast a number of bars in duplicate from the one line of matrices before they are distributed. This is accomplished by the use of a latch a^{20} , (shown in Figs. 1, 36, 43, and 45,) pivoted to the main frame, so that it may be set at will in the path of slide U to lock the same in its extreme position at the right of the machine. As this slide is connected by the intermediate parts with the slide S, the latter is prevented from moving to the right, and thus prevented from shifting the matrices out of the yoke when the latter rises. Thus it is that the matrices are again presented by the yoke to the mold without being distributed. The pot ad-

vances against the rear face of the mold, the matrices are tightly clamped, the justification completed, and the pump acts to fill the mold with molten metal. The justifying devices now descend, the pump-plunger is lifted, the melting-pot recedes from the mold, and the mold recedes from the matrices. The mold revolves to present the contained linotype in front of the ejector, the elevator-arm T descends to its lower position, and the ejector advances to deliver the linotype. About this time the yoke lifts the matrices and space-bars from the mold to the level of the upper guide R, and the slide S acts to carry the line into said guide to deliver the matrices upon the plate t on the end of the arm T. The arm T now swings upward, carrying the matrices, which are shifted by slide W to the distributor, while the hook u , moving to the right, carries the space-bars remaining in the guide R to their receptacle K. In due course the matrices will be distributed, the ejector withdrawn, and the mold rotated to its original position. It is to be observed that the operations of assembling one line of casting from a second and distributing a third are carried on concurrently.

Science News Letter, December 3, 1932

ARCHAEOLOGY

Contorted Human Forms Adorn Temple at Monte Alban

STRANGE people lived in Monte Alban, Indian city of treasure tombs and secret passages.

On the walls of a temple now being unearthed by Mexican archaeologists, appear carved human figures in inexplicable postures. Some of the persons shown here are crawling or swimming. Some lie on their backs. One lies in an abandoned pose, head thrown back, and with an object to his lips as if he were drinking. Sex is in many cases emphasized, as if it had special significance here.

Some of the figures appear crippled. One archaeologist suggested that the scene represents sick people going to some sacred shrine of miraculous healing. But to other archaeologists, the contorted figures recall religious rites of Zapotecan Indians. Monte Alban was a Zapotecan city.

Early Dominican monks who lived among the Indians in this part of Mex-

ico left descriptions of the rites of the Zapotecans. During sacred celebrations, they said, Zapotecan high priests drank the holy but fermented juice of tropic fruits which was forbidden to the common herd. The priests then danced, twisting their bodies into horrible shapes and groaning so frightfully that the ordinary worshippers were terrified.

During these religious functions, too, the priests were expected to break their ordinary vows of celibacy in order to provide for their succession.

The temple on which the gyrating figures are carved was named "The Temple of the Dancers" years ago, when treasure hunters probed the earth-covered mound in which the temple lies buried, and found a tunnel inside. The tunnel had a lining of stone slabs carved in human figures in curious, dance-like postures.

The first paintings known to have

STRYCHNINE

was discovered by the same team of pharmacologists who isolated quinine.

Pelletier and Caventou

will describe their methods

IN THE NEXT CLASSIC OF SCIENCE