INVENTION

The Monotype

"A Classic Invention"

The Monotype is Operated by Perforated Paper Strips Like Those for Automatic Pianos and Jacquard Looms

MACHINE FOR MAKING JUSTIFIED LINES OF TYPE, Tolbert Lanston, of Washington, District of Columbia. Specification forming part of Letters Patent No. 557,994, dated April 7, 1896. [First Patent on the monotype No. 364,521, dated June 7, 1887.] This is an exact reprint of extracts from the 1896 patent.

To all whom it may concern:

BE IT KNOWN that I, TOLBERT LANSTON, of Washington, in the District of Columbia, have invented certain new and useful Improvements in Machines for Making Justified Lines of Type; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

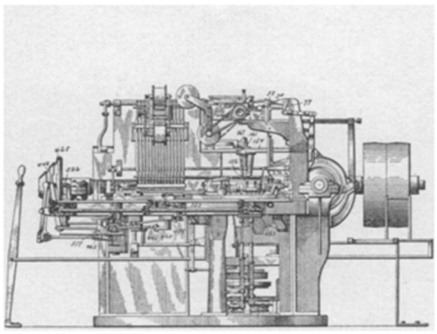
This invention relates to improvements in that class of machines for making justified lines of type in accordance with the methods covered by Letters Patent of the United States No. 364,521, granted to me June 7, 1887, and is designed particularly as an improvement upon the machine shown, described, and claimed in Letters Patent No. 364,525, granted to me on said above-mentioned date.

I will premise with a general description of the parts of the present machine and what they accomplish in order that the detail description which is to follow may be more readily understood.

In this machine, as in my former patented one, two perforated strips or ribbons of paper are employed for rendering the machine operative to form type. In one of these strips special perforations are made for operating upon the devices controlled by that particular ribbon to adjust the machine for the formation of types for any particular line in such manner as that the bodies of some or all of said type (and in this machine the bodies of the space-type only) when formed by the machine will be varied from the normal in such degree that when all the type are assembled they will exactly fill the line, or in other words, will produce a justified line, while corresponding perforations in both of the strips will operate to center one after another the several dies corresponding to the types which those perforations respectively designate, and set in action the type-forming mechanism, as well as the mechanism for assembling the completed type in lines and arranging the lines in a galley or form.

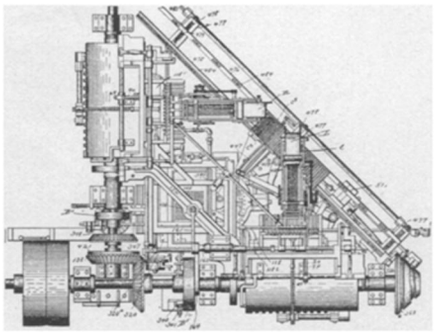
In this machine the dies or matrices are all arranged in a case that is controlled by two frames that slide at right angles to each other, so as to bring any particular die to a common centering-point, according to the amount of movement given said sliding frame respectively, the sliding frames themselves in turn being operated from movable pin-carriages that are provided with pins which, when protected, are adapted to coöperate with corresponding cam-grooves in certain rotary cam-cylinders. The projection of these pins into their corresponding cam-grooves in the cam-cylinders is effected through suitable intermediate mechanism controlled by the perforations in the paper record-strips. To illustrate this, let it be supposed that the matrix-die for the formation of the letter "A" is to be brought to the centering-point. In this instance the perforations representing the letter "A" in the two record-strips will, through the mechanism controlled by said perforations, project the corresponding pins of the two carriages on the right and left hand side of the machine into the rotary cam-cylinder, and the rotation of said cylinders will cause the pins and their carriages and the connected sliding frames to shift the die-case and bring the die A to the centering-point.

When the desired die has been brought to the centering-point, a plunger located above the die-case at said point is automatically depressed, so as to move down the centered die from out of the die-case to form the top of one of a series of molds in a rotating mold-wheel located beneath the die-case in which the type is to be formed, and after the die has thus been brought into coöperation with the said mold a nozzle leading from a reservoir of hot type-metal is automatically inserted in the bottom of the mold, and by automatic pumping mechanism hot metal is forced into the mold to form the type, after which the die-depressing plunger and the pump-nozzle and the die-centering devices resume their normal positions. The mold, with the type within it, is rotated through a portion of the circle, so as to bring a new mold into position at the centering-point and so



THE ELEVATION

of the end of the right-hand side of the Monotype machine.



THE PLAN VIEW

of the Monotype, showing the centering levers by which the type is "justified."

The companion machine, the Linotype, was described by its inventor in the Classic Invention in the SCIENCE NEWS LETTER for December 3, 1932.

as to enable the formed type to be ejected into a trough or guide, where it remains until the types for the whole of the proposed line have been brought, one after another, into said trough or guide behind it, when the whole line is by certain automatic appliances swept or slid into a galley prepared for its reception, the galley in turn being automatically advanced after the reception of each line of type. . . .

Science News Letter, February 11, 1933

SEISMOLOGY

Sea Bottom North of Japan Shaken by Third Earthquake

FOF the third time in a few months, the sea bottom near the island of Sakhalin, north of Japan, was shaken by a deep-seated earthquake, on last Friday afternoon, Feb. 3, at 5:10.7 p. m., eastern standard time. The location of the quake was calculated by scientists of the U. S. Coast and Geodetic Survey and of the Jesuit Seismological Association on the basis of data supplied to Science Service by Georgetown and St. Louis Universities.

Science News Letter, February 11, 1933

Cellophane greenhouses are something new for gardeners.

PHYSICS

Einstein Develops Quantum Mechanics In Latest Paper

By DR. R. M. LANGER, California Institute of Technology, Science Service Correspondent.

PROF. ALBERT EINSTEIN'S first paper on the new quantum mechanics is soon to appear under the title: "Semivectors and Spinors."

He has just allowed his colleagues in theoretical physics at the California Institute of Technology at Pasadena, Calif., to have an advance view of some of the ideas contained in this forthcoming paper, which will be published in the *Proceedings of the Prussian Academy* at Berlin, with Dr. Walter Mayer as collaborating author.

Prof. Einstein is careful to explain that most of the results had already been discovered by other workers. But he wrote the forthcoming paper at the request of his friend, Prof. Paul Ehrenfest of Leiden, to clarify this little known subject.

His discussion with the theoretical physicists was, of course, technical. To make it easier for his American listeners Einstein spoke English. This is the first extended discussion he has delivered in English. Usually he chooses to use German in order to express himself more precisely and clearly. His English is, however, quite good.

Semivectors are related to vectors in somewhat the way that imaginary numbers are related to real numbers. The spinors are restricted semivectors. The vector concept is fundamental in relativity because it enables one to avoid irrelevancies. Thus it helps discover new laws.

The semivector may suggest new physical laws also for it has the same simplifying properties as the vector. As in the case of the vector, the semivector can furnish tensors. The famous equations of Lorentz can be written for semivectors but no important change is involved. The Dirac equation for an electron can be derived in an elegant manner but Prof. Einstein pointed out that it was not the simplest case of its type.

He said it would be interesting to study the simplest case. Then he went on to say that semivectors could be used to advantage in generalized relativity, but that unlike vectors they led to complicated equations.

When Prof. Richard C. Tolman, of the California Institute of Technology, asked for a physical description of a semivector, Prof. Einstein confessed he had been unable to think of any geometrical or physical picture but added that with mathematical analysis the subject could be handled with great ease.

Science News Letter, February 11, 1933

ANTHROPOLOGY

Chinless Skeleton Puzzles Scientists

AT LEAST one of Palestine's earliest known cave men had no chin. A cabled report to Dr. George Grant MacCurdy of Yale University, from Palestine, where archaeologists are excavating remains of ancient man, springs this new surprise regarding Palestine's inhabitants of the Old Stone Age.

A skeleton found in the Cave of the Oven, near Mt. Carmel, has been removed from its stone matrix. Instead of having the well-developed chin that has been ascribed to early Palestine cave men, this skeleton reveals the receding, chinless jaw typical of men of that time in Europe.

The report is from Miss Dorothy Garrod, of the expedition of the American School of Prehistoric Research and the British School of Archaeology.

Altogether, ten skeletons of Palestine men have been unearthed in caves near