

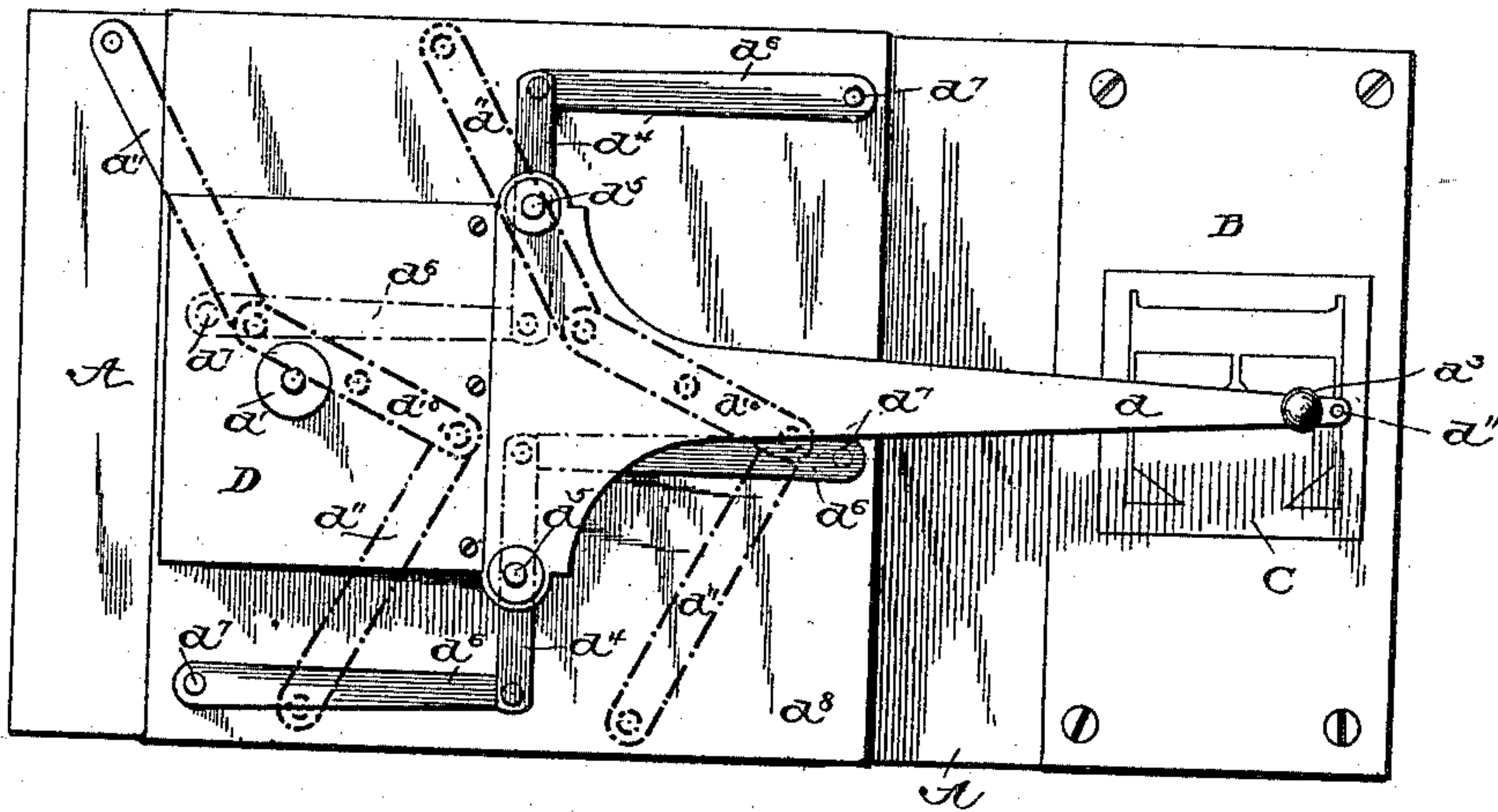
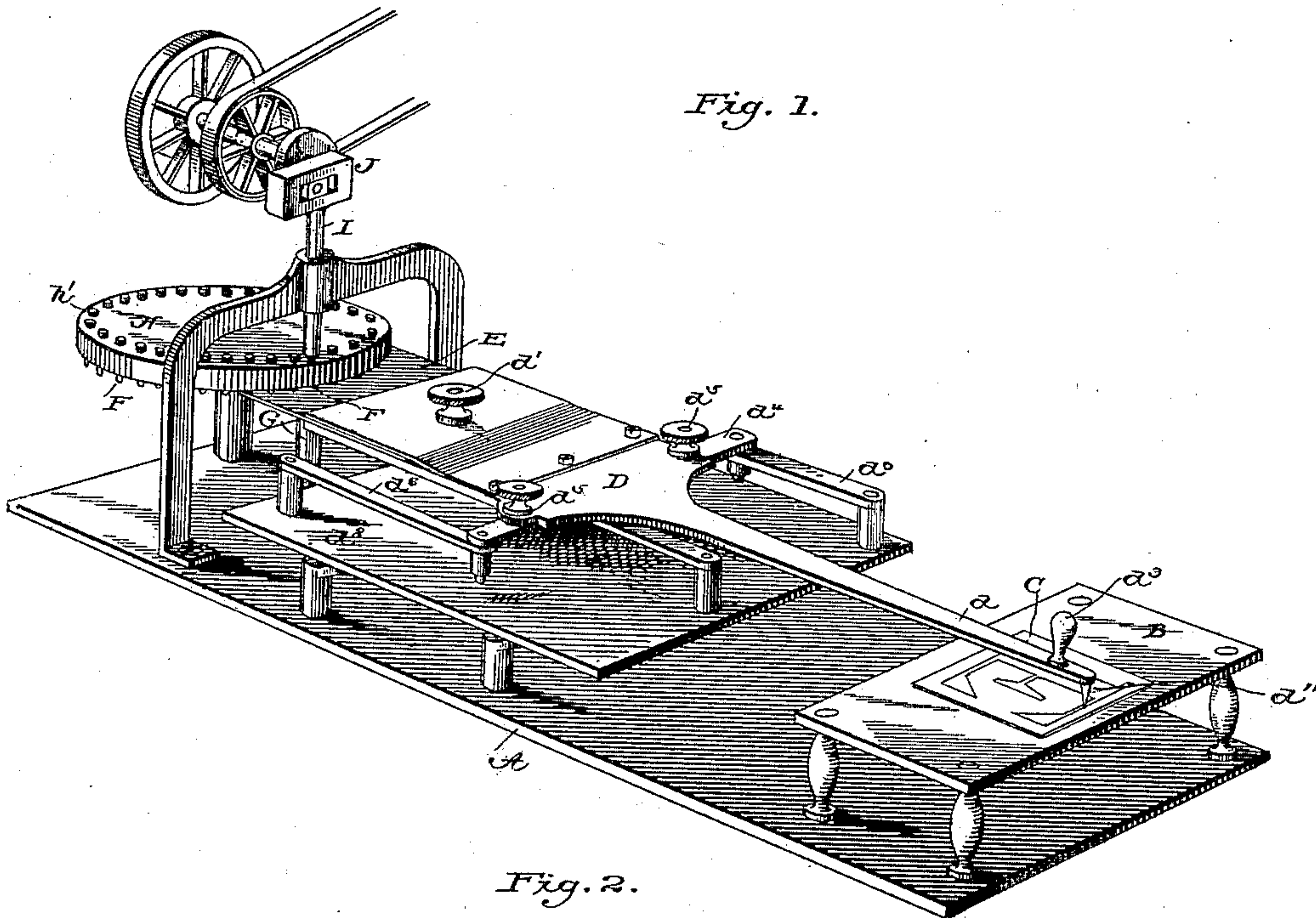
(No Model.)

2 Sheets—Sheet 1.

C. L. TRAVIS.
MATRIX MACHINE.

No. 427,717

Patented May 13, 1890.



Witnesses

W. H. Mortimer,
A. G. Kennedy

Inventor

C. L. Travis
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UNITED STATES PATENT OFFICE.

CHARLES LESLIE TRAVIS, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
MINNEAPOLIS ELECTRO-MATRIX COMPANY, OF SAME PLACE.

MATRIX-MACHINE.

SPECIFICATION forming part of Letters Patent No. 427,717, dated May 13, 1890.

Application filed May 16, 1889. Serial No. 311,019. (No model.)

To all whom it may concern:

Be it known that I, CHARLES LESLIE TRAVIS, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in Matrix-Machines, of which the following is a specification.

My invention is directed to the production of indented, engraved, or figured surfaces by the simple manipulation of a pointer or finger piece capable of universal movement in one plane.

Although adapted for other purposes, my apparatus is more particularly designed for the production of stereotype-matrices in which small letters or characters are grouped or combined to produce larger characters, as is commonly practiced in newspaper advertisements of the present day.

To the ends named the invention consists, essentially, in the combination of a die or tool or a series of dies or tools having a common point of action and a carrier or support for the paper, metal, or other blank, universally movable and adapted to be freely manipulated, so that the blank may be carried freely thereby in any desired course or path past the die or tool, in order that the latter may produce the required figure or design therein or thereon.

It also consists in combining with the above-named carrier and suitable actuating mechanism a series of type-dies and means for presenting them one at a time at a common printing-point at will, so that repeated impressions of any desired die may be made in any desired relation to each other, in order to produce a matrix in large characters or letters composed of numerous small letters.

It also consists in combining with the universally-movable carrier an electric die-operating mechanism controlled thereby.

It also consists in various details of construction hereinafter described.

While I have represented herein those forms of my apparatus which I consider best adapted for ordinary use, it is to be understood that the details may be variously modified, provided, essentially, the same combinations and the same mode of operation are retained.

In the accompanying drawings, Figure 1 is

a perspective view in outline of a matrix-machine constructed on my plan. Fig. 2 is a top plan view showing the supports for the movable carrier shown in Fig. 1. Fig. 3 is a top plan view showing in outline another form of my machine. Fig. 4 is a vertical sectional elevation showing the machine in still another form. Fig. 5 is a view showing a modified form of the tool.

In Figs. 1 and 2, A represents a base or bed; B, a bed or table fixed upon one end thereof and intended to receive and support a pattern C, which it is required to produce, and which may be fixed temporarily thereon in any suitable manner. In the case of a stereotyping-machine this pattern will represent letters or characters.

D represents the universally-movable carrier, one end of which *d* is in position to be carried over the pattern, and the office of which is to give support to the blank sheet E and carry the same beneath the die or tool F in a path corresponding exactly with the form of the pattern C. The manner of supporting the carrier to this end will be presently described. The paper or blank E is presented over the stationary anvil or support G, of any appropriate form, located directly beneath the die F, whereby the paper is firmly supported on the under side as the die acts on its upper side. There are a series of dies F, representing the various letters or characters. They are mounted to slide vertically through the edge of a horizontal supporting-wheel H, and are each sustained by a spiral spring *h'*. The arrangement is such that by revolving the wheel H any one of the series of dies may be brought to the printing-point and there permitted to remain.

The depression of the dies is effected by a hammer or striker I, which may be operated, as shown, by a power-driven eccentric J, or in any other appropriate manner, the only requirement being that it shall have a rising-and-falling motion, so as to depress the die which is for the time being thereunder.

Referring now to the support for the carrier, it is to be observed that the carrier D consists of a long plate or arm having one end divided horizontally and provided with

a clamping-screw d' , by which it may be caused to securely grasp the edge of the blank sheet, while at the opposite end it is provided with a button or finger-piece d^3 , by which to
 5 manipulate it, and with a pointer d'' to travel over or around the pattern. The carrier receives its immediate support, as shown in Fig. 2, from two horizontal links d^4 , each connected thereto at the middle by a vertical pivot d^5 .
 10 Each of these links is in turn supported by two horizontal arms d^6 , extending from its opposite ends and in opposite directions, and each turning at the outer end on a vertical pivot d^7 . This arrangement permits the carrier to be moved horizontally in a right line transversely of its length. The pivots of the
 15 arms d^6 are in turn supported by an underlying plate d^8 , which is in turn sustained by links d^{10} and arms d^{11} . These lower arms and links are identical in form and arrangement with those already described, but they are arranged at right angles thereto, so that they permit the plate d^8 and all the parts thereon to move in a right line lengthwise of the carrier. Thus it will be seen that
 20 the carrier is permitted to move both laterally and longitudinally and the end which carries the blank sheet compelled to move through a path identical with that pursued by the pointer in traversing the pattern. If, therefore, the die representing the letter "E" be brought to the operative position below the
 25 striker—that is to say, to the impression-point—a pattern representing the letter "E" placed upon the table, as indicated in the drawings, the striker set in action, and the pointer caused to follow the outline of the pattern, the blank E will receive a number of impressions or indentations of the character
 30 "E," and these indentations will be grouped or arranged in such manner as to jointly reproduce the desired character of larger size.

In the machine above described I have not represented any means for turning the plate
 45 H quickly to bring the different characters at the printing-point.

When the required plate or matrix is to contain a number of dies, characters, or letters, I provide means for speedily bringing
 50 the proper dies to the operative position. In Fig. 3 I have represented one arrangement for this purpose. The carrier, the pattern-supporting table, the die-supporting wheel, and the means for operating the die may all be identical with those in the first machine;
 55 but the die-supporting wheel H is provided with a pinion h , engaged by a rack-bar h^2 , connected in turn to a finger-lever h^3 . This lever is pivoted midway of its length, and at its
 60 free end is arranged adjacent to the pattern-table and over a plate h^4 , having the various letters or characters arranged thereon in such position that when the lever is brought in line with one of these characters the wheel
 65 will be turned to present the corresponding die at the indenting-point. The attendant, operating the lever h^3 with one hand and the

end of the carrier with the other, is enabled to speedily form designs for large letters composed of such smaller letters as fancy may
 70 dictate.

In Fig. 1 the striker or die-operating device has a continuous action, and therefore the distance between the successive indentations and the uniformity of the spacing between them depend entirely upon the skill
 75 of the operator in moving the carrier at the proper speed.

In order that the operator may control the action of the die both as to time and position, I propose to connect the striker or die-operating mechanism, whatever its form, with the carrier so that the latter will serve not only to move the blank, but also to bring the striker
 80 into action. In Fig. 4 I have represented a very simple arrangement for this purpose. The carrier, its supports, the die-supporting wheel, and the anvil are all identical with those shown in Fig. 1. The striker I, however, is in the form of a soft-metal core, lifted
 85 by a spring i , and arranged to descend through a helix of insulated wire i^2 . Conductors i^3 , connected with the terminals of the coil, lead on the one side to the metallic arm of the carrier and on the other side through a battery or other generator i^4 to the metal top
 90 plate of the table B. This top plate and the carrier are one or both insulated from the frame-work. The pattern employed is of metal. By moving the carrier horizontally the pattern is carried, as in the first form of the machine, in the required course under the
 95 die. When its end is depressed into contact with the plate B, the effect is to close the circuit and cause the striker to descend and act upon the die.

By providing the pattern with marks or graduations, as shown in Fig. 3, to guide the operator in manipulating the pointer he is enabled to space the characters with uniformity.
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While I have described my apparatus as being used in connection with a pattern, it is to be understood that it may be freely manipulated without reference to a pattern, so
 115 that the operator may create new designs, produce large characters in script, drawings, or other designs.

In some cases and for some purposes I may employ, instead of the reciprocating die, a rotary die or tool, as shown, for example, in
 120 Fig. 5.

Having thus described my invention, what I claim is—

1. The combination, with a stationary guide, of a striking die or type having a constant point of action and a paper-support movable
 125 freely in all directions horizontally thereunder, whereby the operator is enabled to produce a design or character composed of numerous small characters or impressions.

2. The combination of a hammer or striker, a fixed support in which it is guided, a series of dies or type, a support whereby said dies

may be brought one at a time to a common point beneath the hammer, and a paper carrier or support mounted to have a universal horizontal motion at the will of the operator, whereby the operator is enabled to produce larger characters or designs composed of different small characters.

3. The combination of a die or type mounted to rise and fall, a clamp or carrier to present a blank sheet to the action of the die, clamp-supports by which it is allowed to move horizontally in all directions, a hand-piece or pointer for moving and controlling the motion of the carrier, and a stationary pattern.

4. In combination with a type or die and a guide in which it is mounted to operate at a fixed point, a fixed anvil opposing the type, and the free universally-movable carrier provided with the controlling arm or pointer and constructed to grasp the sheet or blank at one edge and project the same between the type and anvil.

5. In combination with the paper-carrier, its sustaining-links d^4 , their sustaining-arms d^6 , the plate d^8 , sustaining said arms, the sustaining-links d^{10} , and their sustaining-arms d^{11} , said arms and plates mounted to move horizontally, substantially as described and shown.

6. The combination, substantially as described and shown, of the movable type or die carrier, the hand-lever and intermediate connections for bringing the individual type

to a common printing-point at will, the paper-carrier provided with a handle or pointer, and supports, substantially as described, allowing said carrier to move horizontally in all directions, whereby the operator is enabled to bring into action either of the characters at will and to move the sheet or blank in any desired course beneath the active type to produce a large character composed of numerous repetitions of the smaller character.

7. The combination of the striker having a fixed point of action, an electric motor therefor, a carrier for the blank sheet, provided with a pointer or handle and mounted to move freely in a horizontal direction at the will of the operator to carry the blank beneath the striker, and a motor-circuit terminating at one side in the pointer of the carrier and at the other side in a suitable plate upon which the pointer may be depressed at will, whereby the pointer is enabled to serve the twofold purpose of moving the carrier in the desired path beneath the striker and of closing the circuit to cause the action of the striker.

In testimony whereof I hereunto set my hand, this 7th day of May, 1889, in the presence of two attesting witnesses.

CHARLES LESLIE TRAVIS.

Witnesses:

ROBT. F. GAYLORD,
FRANK B. MURPHY.