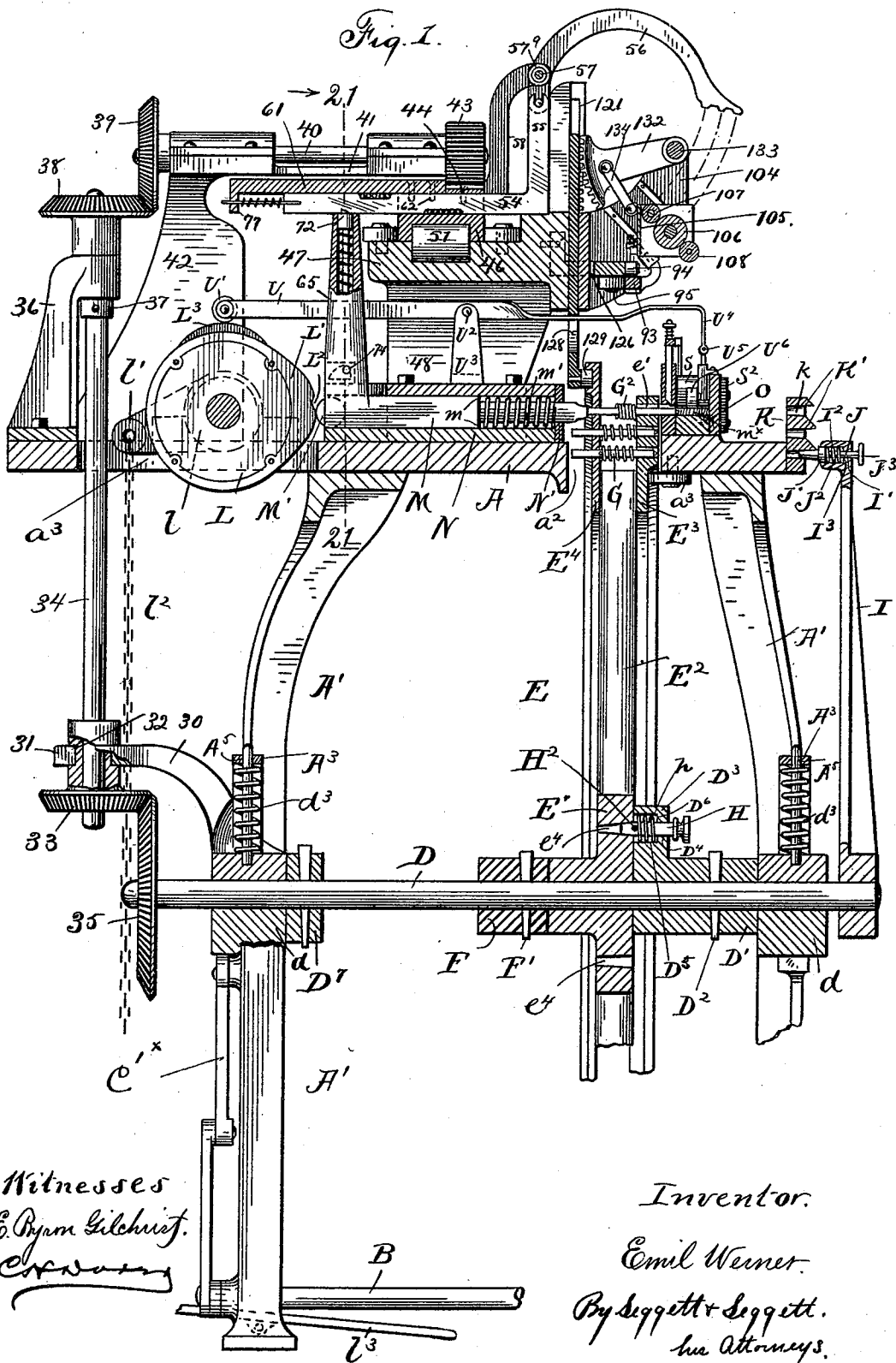


E. WERNER.
TYPOGRAPHIC MACHINE.

No. 519,516.

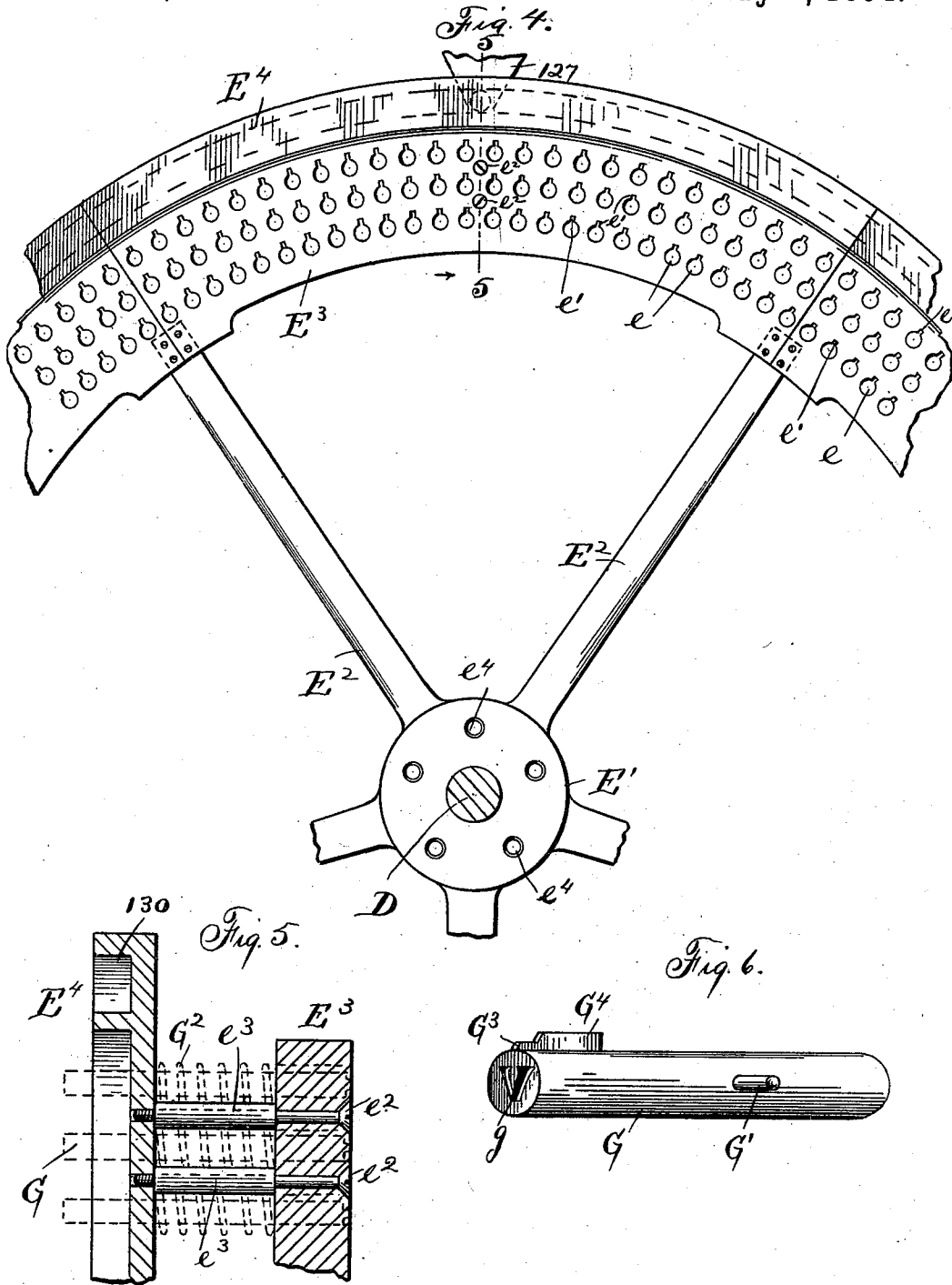
Patented May 8, 1894.



E. WERNER.
TYPOGRAPHIC MACHINE.

No. 519,516.

Patented May 8, 1894.



Witnesses.
E. Byron Gilchrist.
[Signature]

Inventor.
Emil Werner.
By Leggett & Leggett
his Attorneys.

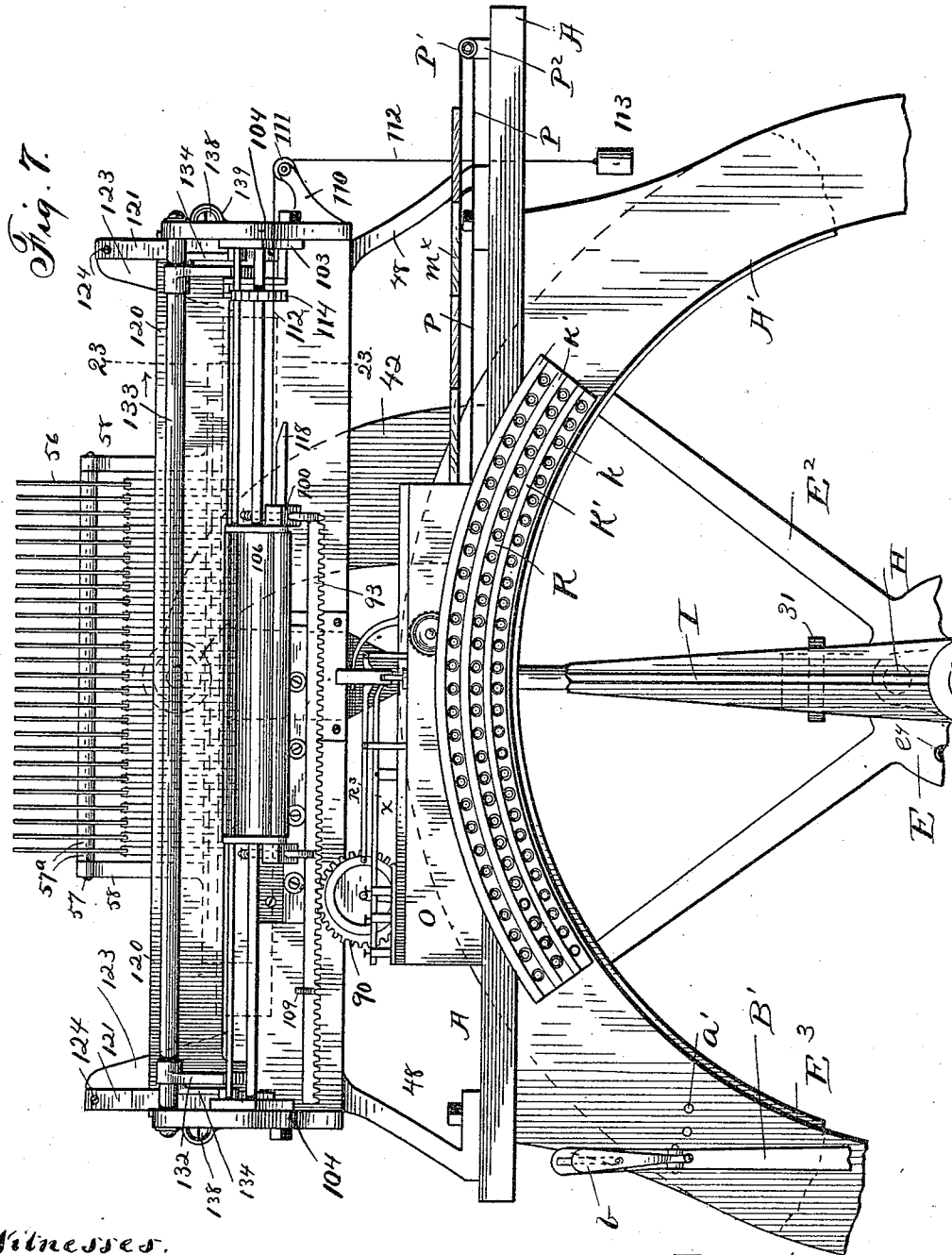
(No Model.)

11 Sheets—Sheet 4.

E. WERNER.
TYPOGRAPHIC MACHINE.

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Patented May 8, 1894.



Witnesses.

E. Byron Gilchrist.
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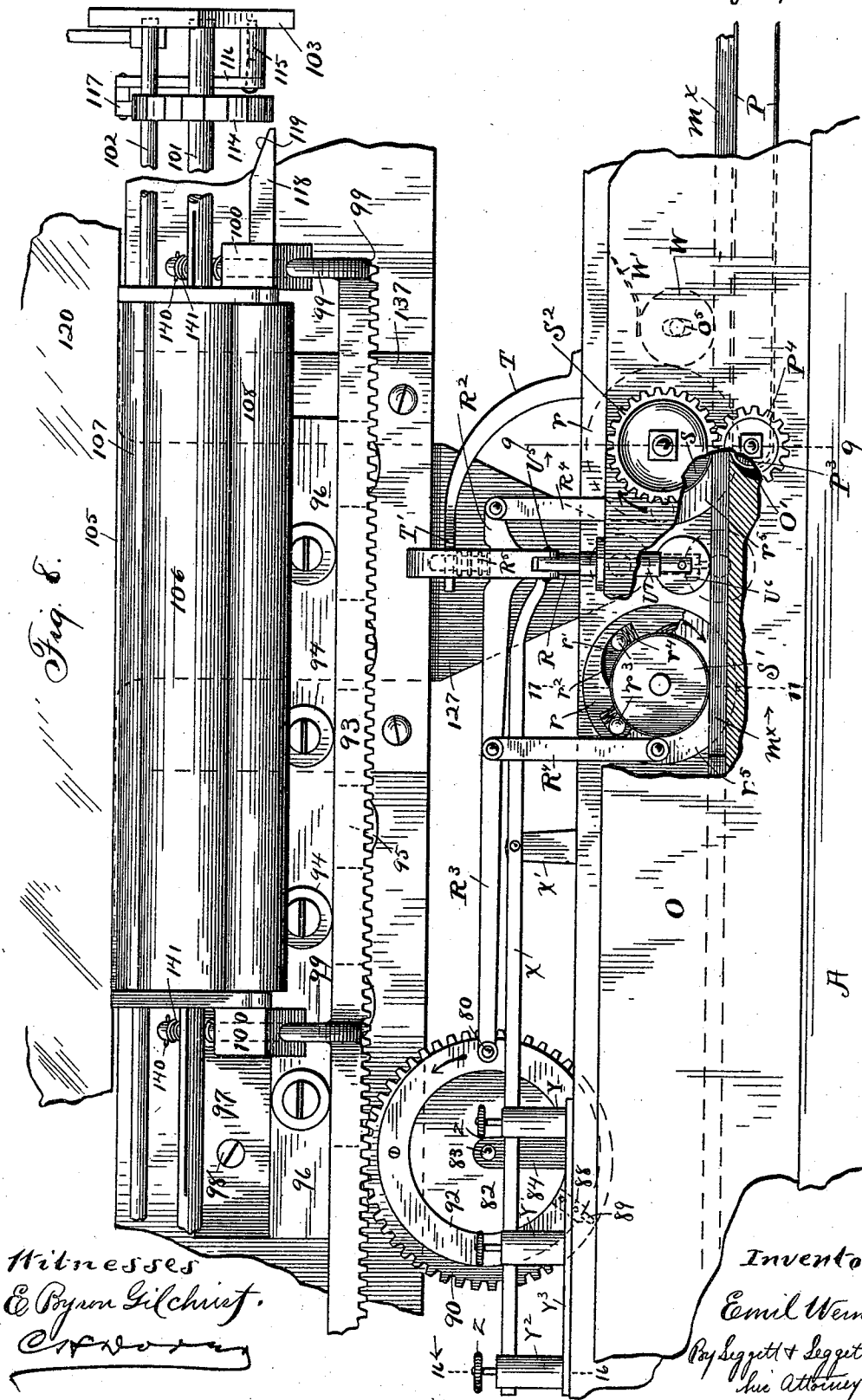
Emil Werner.

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(No Model.)

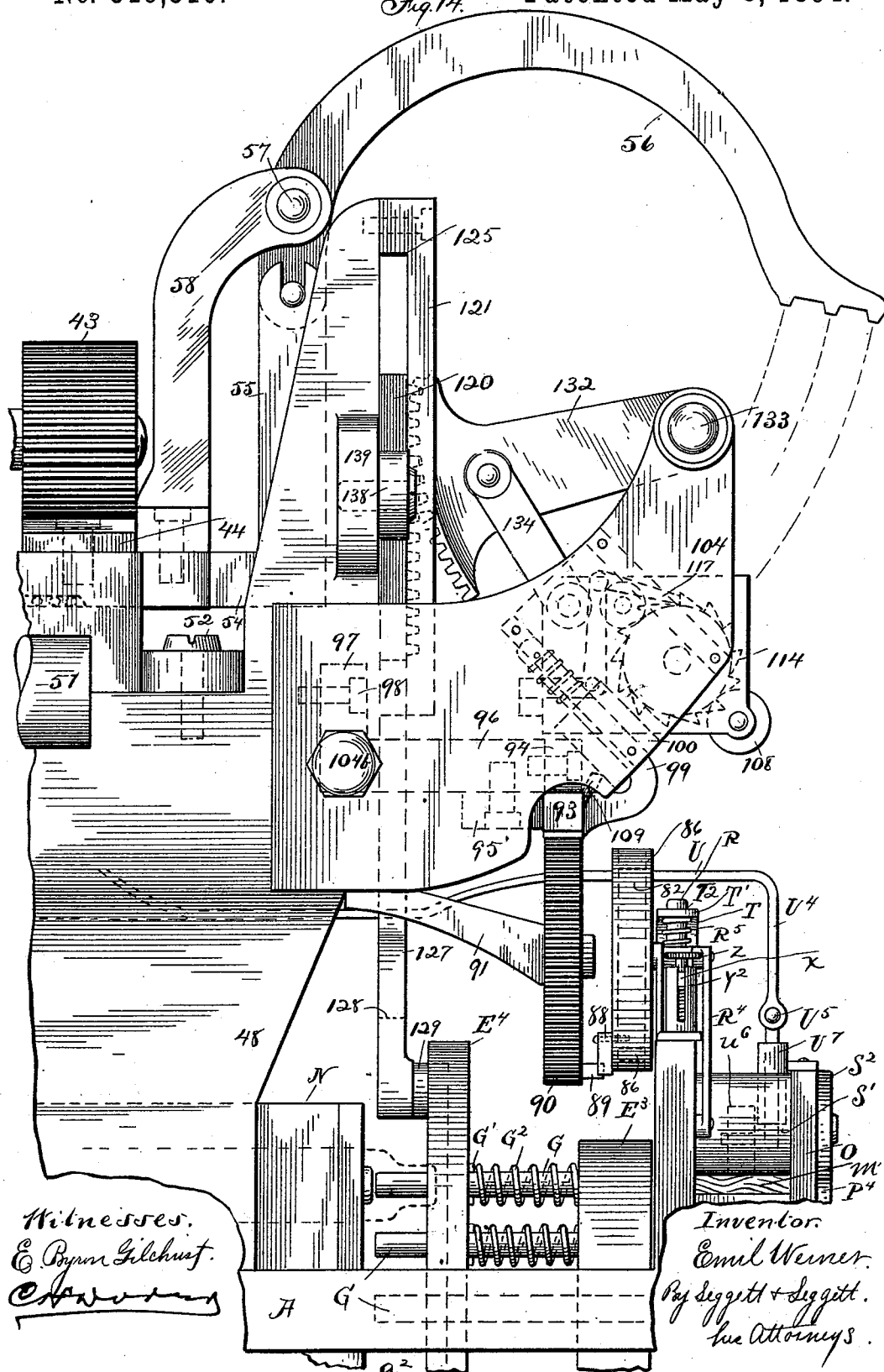
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E. WERNER.
 TYPOGRAPHIC MACHINE.

No. 519,516.

Fig. 14.

Patented May 8, 1894.

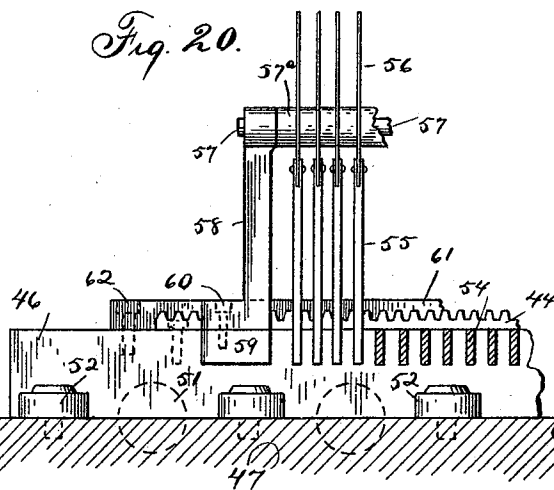
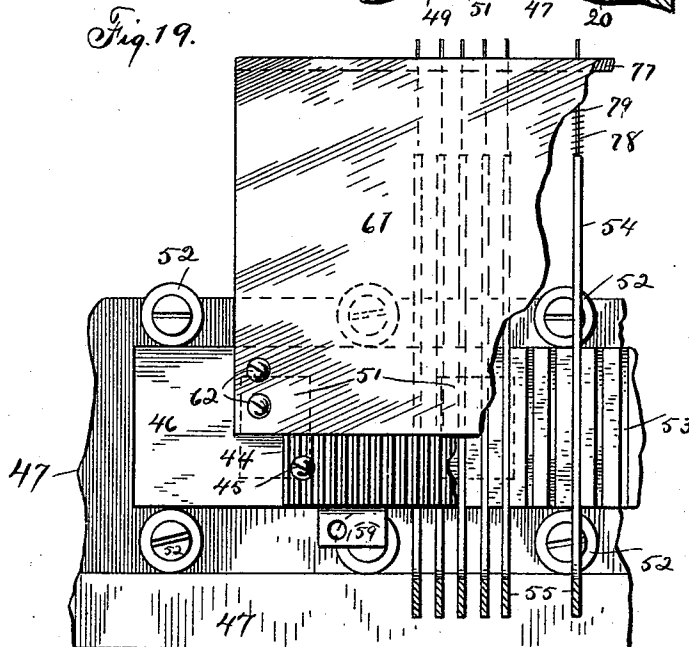
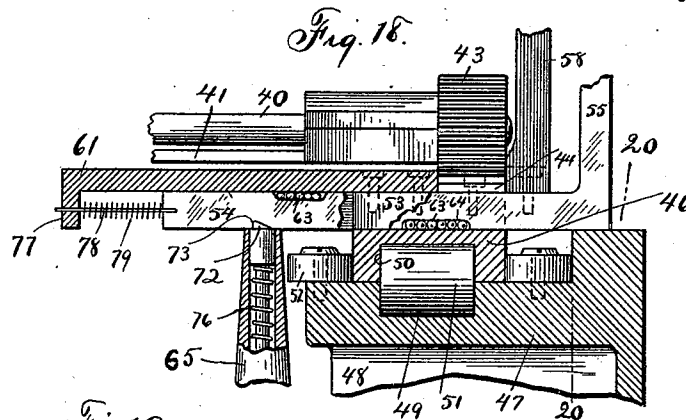


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TYPOGRAPHIC MACHINE.

No. 519,516.

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E. WERNER.
TYPOGRAPHIC MACHINE.

No. 519,516.

Patented May 8, 1894.

Fig. 21.

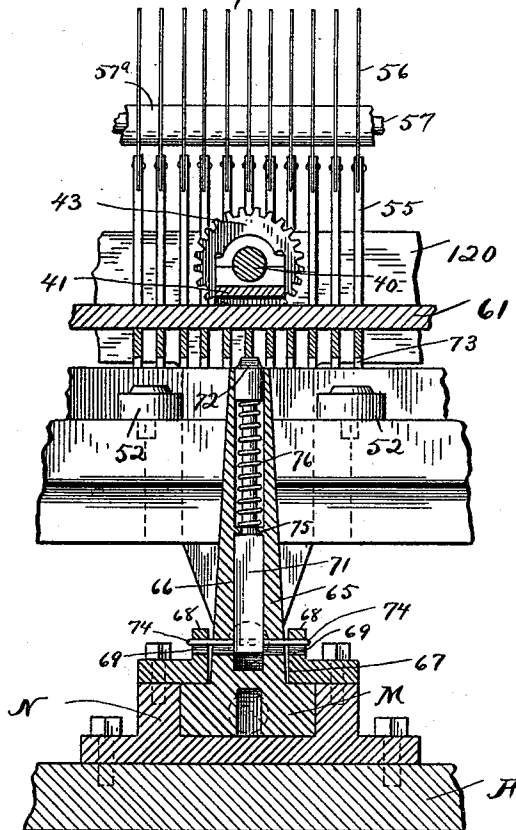
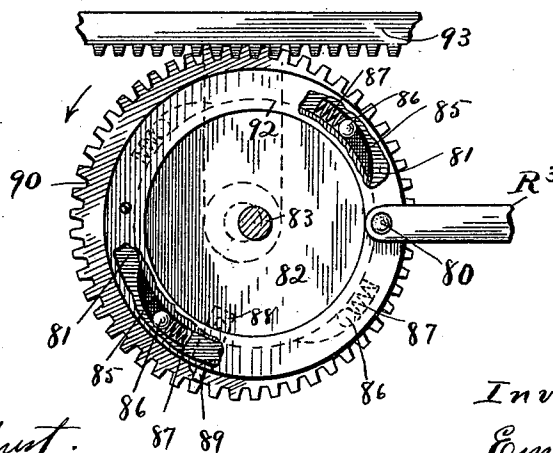


Fig. 22.



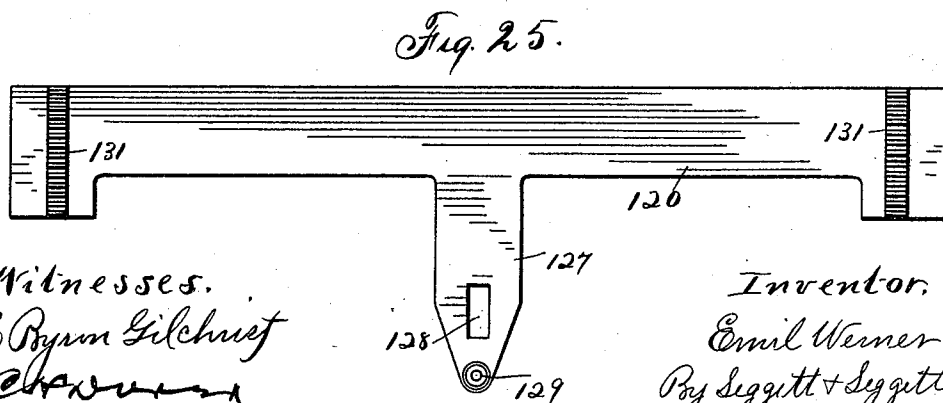
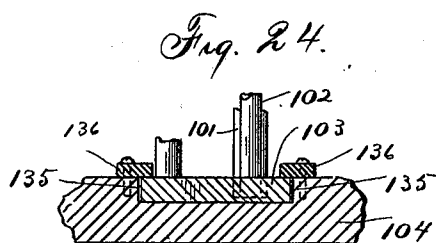
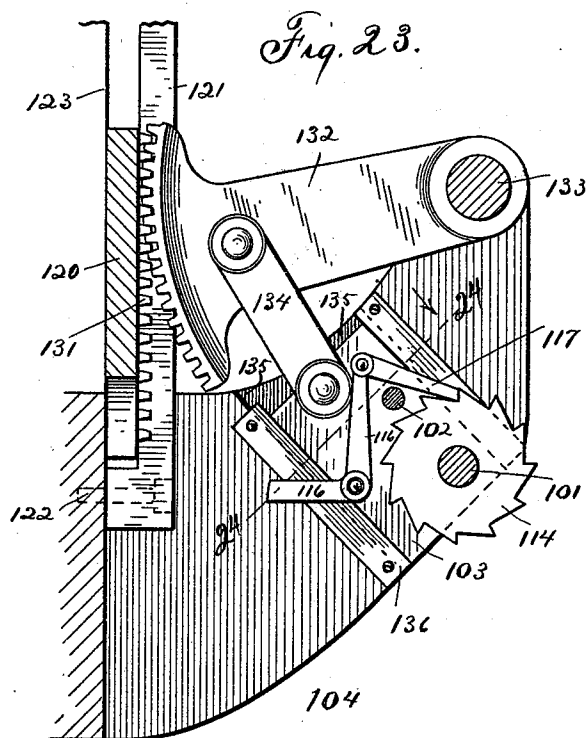
Witnesses.
E. Byron Gilchrist.
[Signature]

Inventor.
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By Leggett & Leggett
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E. WERNER.
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Witnesses.
E. Byron Gilchrist
[Signature]

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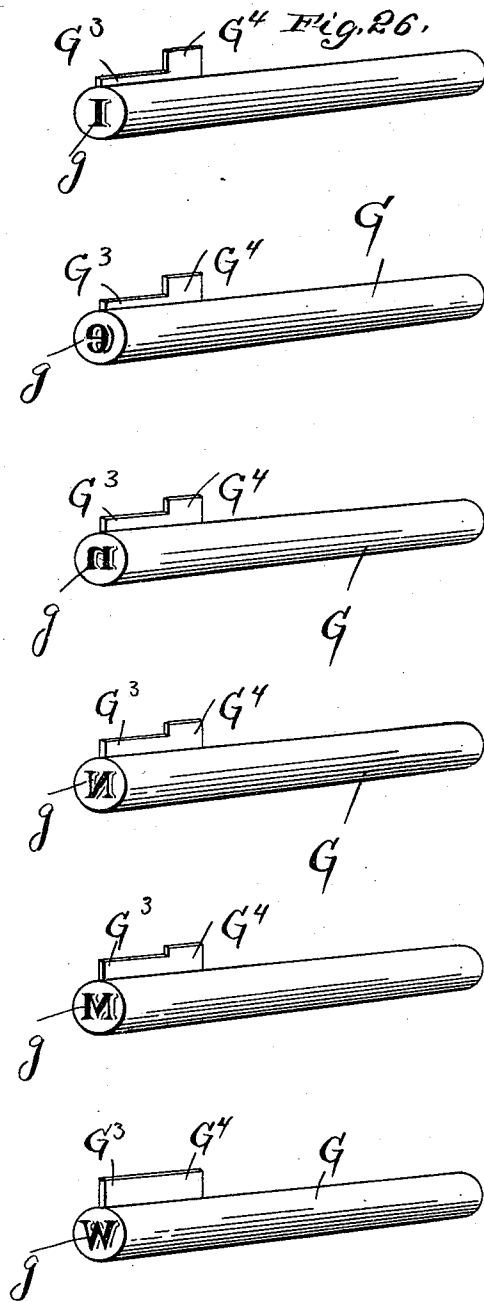
(No Model.)

11 Sheets—Sheet 11.

E. WERNER.
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No. 519,516.

Patented May 8, 1894.



Witnesses.
E. B. Gilchrist.
[Signature]

Inventor.
Emil Werner
By Leggett & Leggett
his attorneys

UNITED STATES PATENT OFFICE.

EMIL WERNER, OF CLEVELAND, OHIO.

TYPOGRAPHIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 519,516, dated May 8, 1894.

Application filed March 10, 1892. Serial No. 424,450. (No model.)

To all whom it may concern:

Be it known that I, EMIL WERNER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful
5 Improvements in Typograph-Machines and Attachments; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to
10 make and use the same.

My invention relates to improvements in typographic machines and attachments; to a typographic machine of that variety wherein
15 type-dies are employed to impress a matrix-blank or matrix from which a stereotype bar or plate may be subsequently cast, the object being to produce a machine whereby matrix-blanks of much greater length can be used
20 and more sets or styles of type can be carried in the machine than was possible with the machines heretofore devised, and whereby the operator can quickly and easily change from one set or style of type-dies to another,—
25 a machine that can successfully be operated by hand, a machine whereby the work can be more accurately and rapidly performed, and a machine whereby the operator is enabled, at all times, to see a proof of his work; and my invention consists not only in mechanism
30 for realizing the advantages just alluded to, but also in mechanism for realizing other advantages and in certain features of construction and in combination of parts hereinafter described and pointed out in the claims.

35 In the accompanying drawings, Figure 1 is a left hand side elevation in vertical section of my improved machine, and attachments, partly unsectioned, the section being taken on a line central and longitudinal of the type-
40 die that is in position for operation, showing the parts in position with the said die in the act of impressing the matrix-blank or matrix. Fig. 2 is a front elevation, exhibiting, among other things, the means employed for elevat-
45 ing the shaft upon which the type-die-wheel is mounted, with the type-die-wheel removed. Fig. 3 is a plan in detail, and in section on line 3—3, Fig. 2. Fig. 4 exhibits a portion of the type-die-wheel with the supporting-shaft
50 in section. Fig. 5 is a detail in vertical section on line 5—5, Fig. 4, looking in the direction of the arrow. Fig. 6 is a perspective

of a type-die; Fig. 7 a front elevation of my improved machine and attachments. Fig. 8 is a front elevation of the matrix-blank or
55 matrix-feeding-mechanism, the paper-carriage of the type-writer mechanism and the mechanism operatively connected with said matrix-feeding mechanism and adapted to effect the horizontal movement of said pa-
60 per-carriage. Figs. 9 and 11 are vertical sections of portions of the matrix-feeding-mechanism taken, respectively, on lines 9—9 and 11—11, Fig. 8, looking in the direction of the arrows. Fig. 10 is a plan of the matrix-
65 feeding mechanism with bar R, and the lower portion of depending member U⁴ of lever U in transverse section. Fig. 12 is a vertical section of a portion of the matrix-feeding-
70 mechanism, on line 12—12, Fig. 10, looking in the direction of the arrow. Fig. 13 is an elevation in detail exhibiting means employed for guiding and properly holding the type-
75 die in its movement to impress and during its impression of the matrix-blank or matrix. Fig. 14 is a left hand side elevation showing the matrix-blank or matrix-feeding mechanism, a portion of the type-writer-mechanism and the means or mechanism adapted to op-
80 eratively connect the paper-carriage of the typewriter mechanism with the matrix-feeding mechanism and type-die-wheel of the typograph machine. Fig. 15 is a front side elevation of the spacing-mechanism, partly in
85 central section. Fig. 16 is a vertical section on line 16—16, Fig. 15. Fig. 17 is a detail in section on line 17—17, Fig. 15. Fig. 18 is a side elevation, partly in section, of a portion of the type-writer mechanism, somewhat en-
90 larged as compared with corresponding parts in Fig. 1. Fig. 19 is a plan view of a portion of the type-writer-mechanism and with the upright members 55 of the type-lever-bars in transverse section. Fig. 20 is a front side elevation of a portion of the typewriter-mech-
95 anism with bed 47 and a number of type-lever-bars 54 in section. Fig. 21 is a vertical section on line 21—21, Fig. 1, (looking in the direction of the arrow) the same exhibiting the mechanism that is adapted to operatively
100 connect the type-levers of the type-writer-mechanism with the type-die-actuating mechanism of the typograph machine. Fig. 22 is a front side elevation of the mechanism

adapted to operatively connect the matrix-feeding mechanism of the typograph machine with the paper-carriage of the type-writer mechanism to effect the horizontal movement of said paper-carriage. Fig. 23 is a vertical section of a portion of the typewriter-mechanism on line 23—23, Fig. 27, looking in the direction of the arrow. Fig. 24 is a section on line 24—24, Fig. 23, looking in the direction of the arrow. Fig. 25 is a front side elevation of vertically sliding-plate 120 of the typewriter-mechanism. Fig. 26 exhibits, in perspective, six type-dies bearing, respectively, the type, I, e, n, N, M, and W, illustrating the variations in the size of the noses or ribs G^3 of the different type-dies. I would here remark that in most of the figures, portions have been broken away, partly to reduce the size of the drawings, but more especially to more clearly exhibit certain features in the construction.

A represents the bed of the typograph machine that is mounted upon legs A^1 , a leg being provided at or near each corner of the machine, both the legs at the front and rear of the machine having, respectively, an inwardly-extending arm, A^2 . The legs of one side of the machine, (in the present instance, the left hand side) have, also, respectively, an inwardly-projecting lug or arm, a , the lugs a affording bearings for a shaft, B, that extends outside its respective bearings. Upon shaft B, forward of its forward bearing, (see Fig. 2) is rigidly mounted a hand-lever, B^1 , the latter, by means of a link, C^1 , being connected with a bell-crank-lever, C, the latter being pivoted to inwardly-extending arm, A^2 , of the respective leg of the machine, as at C^2 . A bell-crank-lever, substantially the same as that already referred to, is also operatively connected with shaft B, at the rear of the rearward bearing of the shaft (see Fig. 1). Inwardly extending arms A^2 of the front and rear pair of legs do not make contact, (see Fig. 2) but an open space is left between them for the up-and-down movement of sliding-boxes, d , that afford bearing for a shaft, D. Sliding-boxes d , are supported by the free ends C^3 of bell-crank-levers C, and C'^x and are recessed as at d' , (see Fig. 3,) to embrace the inner ends of inwardly-extending arms A^2 of the legs of the machine, whereby they are guided in their up-and-down movement. Boxes d are provided, respectively, with an upwardly-extending pin or rod, d^2 , upon which is mounted a spring, d^3 , springs d^3 being adapted to act in the direction to hold the respective sliding-boxes d downward, and being confined upon pins or rods d^2 between the top surface of boxes d and a cross-bar, A^3 , bolted, as at A^4 , to the upper end of the inwardly-extending arms A^2 of the legs of the machine, cross-bars A^3 being perforated, as at A^5 , to accommodate the up-and-down movement of pins or rods d^2 , the latter being of such length as at all times to extend above the respective cross-bar A^3 . Upon shaft, D, at the rear of its for-

ward bearing, (see Fig. 1) is rigidly mounted a collar, D^1 , for instance, by means of a pin, or key, D^2 , that extends through the collar and shaft, and immediately at the rear of collar D^1 , shaft D has loosely mounted thereon a type-die-wheel, E. Type-die-wheel or type-die-carrier E, (see Fig. 4) comprises a hub, E^1 , and radial arms, E^2 , preferably integral with the hub and equidistant apart. Arms E^2 of the type-die-wheel, at their outer ends, have secured thereto at opposite sides, respectively, segmental plates E^3 and E^4 , extending from arm to arm as shown. Adjacent segmental plates, that are located in the same circular plane, preferably abut each other, and plates E^3 , E^4 , are provided with lateral holes, e . There are usually as many holes e in a plate as there are numerals, punctuation-marks, and letters in the alphabet, and holes e are arranged in series concentric with the axis of wheel E, the holes of the series of holes of plates E^3 being coincident or registering with the respective holes of the respective series of holes in adjacent plates E^4 . Adjacent plates, E^3 , E^4 , are braced apart (see Fig. 5) by means of sleeves, e^3 , mounted on screws, or pins, e^2 , that connect the plates together. The registering holes of said plates, E^3 , E^4 , are adapted to receive type-dies, G , the latter having the type, as at g , at the forward end or face thereof (see Fig. 6.) In the normal position of the type-dies the face of the type is preferably flush with the outer surface of forward plate E^3 , with the shank or stock of the type-die protruding at the rear of plate E^4 . Just forward of plate E^4 , the type-die is provided with a stop, usually a pin, as at G^1 , to limit the rearward movement of the type-die, and mounted upon the type-die, between stop G^1 , and the rear side of forward plate E^3 , is a spring, preferably coiled, G^2 , (see Figs. 1 and 5) that is adapted to act in the direction to hold the type-die rearward. The type-die at the forward end, has a laterally-projecting rib or nose, G^3 , for the purpose hereinafter made apparent, and immediately at the rear of this nose or rib, and preferably integral therewith, has a laterally-projecting flange or rib, G^4 . Forward segmental plates E^3 , have slots, as at e' , in open relation with holes e , of the plates, to accommodate the passage of nose or rib G^3 and rib or flange G^4 of the type-die, laterally-projecting rib or flange G^4 , serving as a guide to hold the type-die in proper position, as will hereinafter more fully appear.

It is desirable to have at least three sets of type of different sizes, and it will be observed that with my improved machine, five or more sets can be just as conveniently employed as three, and as many pairs of segmental plates E^3 E^4 are provided as it is desired to carry sets of type dies in the type-die-wheel. Hub E^1 of the type-die-wheel, (see Figs. 1 and 4) midway of adjacent arms E^2 , is provided with lateral holes or perforations, e^4 , and collar D^1 , mounted on shaft D, as aforesaid, has

a laterally-enlarged portion, D^3 , that is provided with a lateral hole or perforation, D^4 , adapted to register with holes e^4 in the hub of the type-die-wheel, the perforations e^4 being preferably tapering, as shown, and adapted to receive a correspondingly tapering pin or peg, H. Hole D^4 of lateral member, D^3 , of collar D' , is enlarged, as at D^5 , and pin or peg H, within such enlargement of perforation, D^4 , has mounted thereon a coil-spring, as at h , said spring being adapted to act in the direction to hold pin or peg H within the respective hole e^4 of the hub of the type-die-wheel, the spring being confined between a pin or shoulder H^2 of peg H and shoulder D^6 formed by the enlargement of hole D^4 , as shown.

The mechanism just described, it will be observed, is adapted to hold the type-die-wheel in the desired adjustment and, by removing pin or peg H from the respective hole or perforation e^4 in the hub of the wheel, the latter can be turned to bring any desired set of type-dies or type in position for use, as desired, and held in such position by means of said pin or peg. The bed of the machine is of course slotted, as at a^2 , (see Fig. 1) to accommodate the type-die-wheel. The forward side of uppermost segmental plate E^3 , does not make contact with the adjacent wall of slot a^2 , but an anti-friction roller is secured to the under side of the bed of the machine, as at a^3 , and the forward side of segmental plate E^3 , in position uppermost bears against the periphery of said anti-friction-roller, the type at the forward end of the type-die being thus protected. Immediately at the rear of the hub of the type-die-wheel, shaft D has rigidly mounted thereon a collar, F, for instance, by means of a pin or key, F' , whereby, in conjunction with collar D' already described, the type-die-wheel is held from moving endwise on shaft D.

Upon shaft D, at the forward end thereof, (see Fig. 1) is rigidly mounted an arm, I. Arm I, at its upper end, is provided with an index key, J, the upper end of the arm being perforated, as at I' , for the passage of the shank of the said index-key, and being enlarged, as shown, to increase the bearing surface of the index-key. The index key is provided with a shoulder or pin, J' , and perforation I' of arm I, is enlarged, as at I^2 , forming a shoulder, as at I^3 , and between shoulder I^3 , and pin or shoulder J' , is confined upon the shank of the index-key, a coil-spring, J^2 , that is adapted to act in the direction to retain the index key within the respective hole of the series of lateral holes, k , in segmental plate or index, K, that is rigidly secured to the front end of the bed of the machine, (see Figs. 1 and 7) the lateral holes and series of lateral holes in plate K corresponding, in number, with the type-dies and series of type-dies in a set of type-dies in the type-die-wheel, and being preferably funnel-shaped or tapering to facilitate the entrance of the index-key. Index

plate K, immediately above each series of holes thereof, has a forwardly-projecting beveled portion, K' , said beveled portions presenting toward the eye of the operator and, immediately above the respective holes, bearing the letter, mark or character that the hole represents,—that is, the letter, mark or character, corresponding with the type of the type-die that is brought into position for operation and locked in said position when arm I and index-key J is manipulated to said index-key to engage the hole or perforation immediately below said letter, mark or character on the index plate, the type-die-wheel being moved or turned in the one direction or the other to bring the desired type-die of a series of type-dies in position, according as arm I, by means of the head or knob J^3 of the index-key is manipulated in a corresponding direction. As aforesaid, shaft D and attachments have a vertical movement, the object of said movement being to bring the desired series of type-dies in an operative position, and, as hereinbefore indicated, the mechanism for effecting this vertical movement of shaft, D, and attachments, is operated by hand-lever B' . (See Fig. 2.)

To hold shaft D and attachments at the desired elevation, that is, to lock lever B' in the desired adjustment of parts, lever B' , adjacent its handle B^2 , is provided with a tilting-latch or lever, b , that is pivoted to lever B' , as at b' , and latch b , at its lower end, comprising a pin or bolt b^2 , that is adapted to enter, through a perforation B^3 in lever B' , any one of three holes or perforations a' , in the adjacent leg of the machine, according to the elevation at which it is desired to adjust and hold shaft D and attachments.

B^4 (see Fig. 2) represents a spring that is secured, for instance, to latch, b , with the free end thereof bearing against the opposing surface of handle B^2 of lever B' , said spring being adapted to act in the direction to retain pin or bolt b^2 of latch b in the respective hole a' .

In the adjustment of lever B' shown in Fig. 2 of the drawings a die in the central series of type-dies of the type-die-wheel would be in position to be operated and by withdrawing locking-pin or bolt b^2 from the central hole in the respective leg of the machine, and manipulating lever B' , the outer or inner series of type-dies would be brought into the proper position according as it was desired to bring a die in the outer or inner series of dies into position for operation. The length of arm I, by means of which the type-die-wheel is turned as aforesaid, is of course such that the index key J will be adapted to enter the holes in the lower or inner series of holes in index plate K when the type-die-wheel is in position with a die in the outer series of dies in position for operation. The letters, marks, or characters indicated on the beveled forwardly-projecting portion of plate K immediately over the holes or perforations in the

series just referred to, therefore, correspond with the type borne by the respective dies of the outer series of dies of the type-die-wheel. Likewise, the letters, marks, or characters, indicated upon plate K immediately above the holes of the middle series of holes in said plate, correspond with the type borne by the respective dies of the middle series of dies of the type-die-wheel, the index key being in position within a hole of the series last referred to when the type-die that said hole represents, is in position to be operated, and likewise, with the remaining series of holes in plate K and the corresponding remaining series of type-dies of the type-die-wheel.

L represents a cam-roller, (see Fig. 1,) the trunnions of which have bearing in suitable boxes, l , that, in the present instance, are secured to the bed of the machine rearward of the rear legs thereof. One of the trunnions of cam-roller L has a rearwardly-extending arm, l' , that is operatively connected, by means of a chain, l^2 , or other suitable device, with a treadle, l^3 , mounted upon a cross-bar located at the lower end and connecting the rear legs of the machine. Cam-roller L is provided with a peripheral cam L' that is adapted to engage a roller, M' , trunnioned in the rear end of plunger, M, and actuate the latter, plunger M being adapted to reciprocate endwise plunger-case, N, that is rigid with the bed A of the machine. The forward portion of plunger M is reduced in size, as shown, forming shoulders, as at m , and the forward end of plunger-casing N is correspondingly perforated, as at N' , for the passage of said reduced portion of the plunger, the latter having mounted thereon a coil-spring, m' , that is confined between shoulders m and the forward end of the plunger-casing, and adapted to act in the direction to hold the plunger rearward.

The plunger is adapted to engage the butt of the shank or stock of the type-dies and force the dies forward to cause the dies to impress the matrix-blank or matrix, the latter, represented by m^x , being conveyed along, forward of the type-die-wheel, by the following mechanism: O represents a box (see Figs. 1, 7, 8, 9, and 10,) rigidly secured to or integral with bed A of the machine, and located immediately forward of longitudinal slot a^2 . Box O is open at the ends and top. The matrix-blank or matrix is fed endwise through box O by means that will presently be described, the sides of said box constituting upright parallel guides for the matrix-blank or matrix in its passage between said guides, to, by and from the point at which it receives its impression. P represents an endless-conveyer-belt that leads around a roller or pulley, P' , trunnioned in upright posts or suitable supports, P^2 , (see Fig. 7) at the right hand end of the machine, and leads over a roller or pulley, P^3 , (see Figs. 8 and 9) that is trunnioned in the sides of box O. The forward trunnion of roller, P^3 , extends outside of box O, and has rigidly mounted upon its

forward end a spur-gear, P^4 . The bottom of box O, in the present instance, is located somewhat above the bed of the machine, but, of course, is cut away, as at O' , (see Fig. 8) to accommodate the passage of belt P and the location of roller P^3 . Immediately forward of the type-die that is in position to be operated upon by the type-die-plunger M, the rear side of box O is perforated or bored vertically, as at O^2 , (see Fig. 12) and within said perforation or bore is located the lower portion of an upright bar R of the matrix-blank or matrix feeding-mechanism. The lower end of this bar is inclined or beveled, downward and forward, as at R' , this bevel or incline of the lever being adapted to be engaged by nose or rib G^3 of the type-die, and the rear side of box O has a lateral perforation, as at O^3 , for the entrance and passage of the type-die, said lateral perforation of course being in open relation with vertical perforation O^2 . Perforation O^3 is preferably square and bar R, in cross-section, is of a corresponding shape and size. As shown more clearly in Figs. 12 and 13 of the drawings, lateral perforation O^3 is tapering or funnel-shaped to facilitate the entrance of the type-die, the forward or reduced end of said perforation being just large enough to receive the type-die, the object being to prevent lateral motion of the type-die, and to cause the latter to properly engage and impress the matrix-blank or matrix, that is, to cause the impression to be made exactly at right angles to the surface to be impressed the rear side or wall of box O of course having a slot, as at O^4 , in open relation with perforations O^3 , to accommodate nose or rib G^3 and flange G^4 of the type-die. Bar R has laterally extending arms R^2 , R^3 , (see Fig. 8) that extend in opposite directions and to which are pivotally secured, depending links R^4 , that, at their opposite ends, are pivotally connected, with annular disks or rings, r , loosely mounted upon feed-rollers S and S' . Feed-rollers S and S' are located, respectively, within box O and at opposite sides of, and preferably equidistant from bar R. Feed-rollers S and S' are trunnioned in the sides of box O, (see Figs. 9 and 11) annular disks or rings, r , being mounted upon the respective roller in the rear side or wall of box O that is recessed to accommodate the location and operation of said annular disks or rings. The forward trunnion of feed-roller S extends outside of box O (see Figs. 8 and 9) and upon its forward or outer end, has operatively mounted thereon a spur-gear S^2 , that is in mesh with spur-gear P^4 , mounted on the forward trunnion of roller P^3 , hereinbefore described. Annular disks or rings r , on their inner periphery, are provided with curved grooves or slots, r' , preferably four in number, and gradually reduced in size as at r^2 . Within grooves or slots r' , between the periphery of the respective rollers S S' and the opposing walls of said grooves or slots, are located rollers, r^3 . Between these rollers r^3 , and the end of grooves

or slots r' opposite to the reduced end of said slots or grooves, are located springs, r^4 , that are adapted to act against the respective roller r^3 in the direction of the reduced end of the slots or grooves and to prevent the displacement of rollers r^3 , and springs r^4 , is provided an annular plate, r^5 , secured to annular disk or ring r about the respective feed-roller and flush with the inner surface of the rear side of box O, (see Figs. 8, 9, and 11) and links R^4 are connected, respectively, directly with the respective annular plate or cap r^5 . The operation of this feeding-mechanism is as follows: Cam-roller L is operated to cause peripheral cam L' thereof to actuate plunger M, the latter in turn engaging and forcing the type die forward to impress the matrix-blank or matrix, the latter having been brought into proper position within box, O. Previous to the type-die making its impression, however, lateral rib or nose G^3 at the forward end of the die will have engaged the incline or bevel R' at the lower end of bar R, and caused the latter to be elevated. This motion of bar R and its arms R^2 R^3 , will, through links R^4 R^5 , be communicated to annular disks or rings r , the latter being moved in the direction indicated by the arrows, causing rollers r^3 , located within slots or grooves r' of disks or rings r , to be wedged into the reduced portion of said grooves or slots between the periphery of the respective feed-rollers S S' and the opposing wall of the respective slots or grooves, and causing feed-rollers S S' to rotate with the respective encircling disk or ring r . The periphery of feed-rollers S S' is milled, or knurled as shown, or provided with suitable projections, whereby the rollers, upon being rotated, as aforesaid, will take hold on the matrix-blank or matrix and feed the same onward as required. The gearing at P^4 S^2 communicates motion from roller S to conveyer-belt P upon which the matrix-blanks will likely be fed in procession to feed-roller S. The matrix-blank may, of course, be of any length desired, but should just be wide enough to nicely pass between the sides of box O, the sides of box O serving as guides to maintain the matrix-blank or matrix in a straight path. The distance that feed-rollers S S' are located, respectively above the bottom of box O and conveyer-belt P (the portion of the latter within box O may be said to constitute a bottom for this part of said box) relative to the thickness of the matrix-blanks, is, of course, such that feed-rollers S S' will not fail to take hold of the matrix-blank or matrix, and feed the same as required. The noses or ribs G^3 , of the respective type-dies, of course, vary in size, according to the distance it is required to feed the matrix-blank or matrix that is to receive the impression of the respective dies in order to obtain proper justification. For instance, a die adapted to impress the letter "m" would necessarily require a rib or nose, G^3 , adapted

to lift or elevate bar R a greater distance and consequently cause the connected mechanism to feed the matrix-blank or matrix farther than, for instance, the die adapted to impress the letter "i." In impressing the matrix or matrix-blank with the letters composing a word, to render the work desirable, the impression should be equidistant apart, but as aforesaid, the letter "m," for instance, requires more space than the letter "i;" consequently the variation in the size of ribs or noses G^3 of the respective type-dies, to cause the feeding-mechanism to move the matrix or matrix-blank the proper distance. This difference in the size of ribs or noses G^3 of the respective type-dies, will be more readily understood upon reference to Fig. 26 that exhibits, in perspective, six type-dies bearing the type, I, e, n, N, M, and W. Of these letters or characters, the letters I and e occupy the least space and the letters M and W occupy the most space. It is quite obvious that in order to obtain the proper adjustment of space or distance between the letters of a word, the matrix-blank or matrix must be fed or moved a greater or less distance according to the size of the space occupied by the letter or character impressed. With my improved construction by providing the type-die with a rib or nose G^3 of the proper size, the most accurate justification is obtained. Cam-roller L has located within it, a spring, preferably an ordinary clock-spring, (not shown) that is adapted to act in the direction to return the cam to its normal position, and upon the return of the cam-roller to its normal position, spring m' will return plunger M to its normal position, and the pressure being thus removed from the type-die that has just made an impression in the matrix-blank or matrix said type-die will also be returned to its normal position by the action of spring G^3 . Bar R and connected annular disks or rings r , upon the withdrawal or recession of the type-die from the matrix-blank or matrix, are returned to their normal position, partly by the gravity of the parts, and partly (and promptly) by the action of a spring, R^5 , (see Figs. 8 and 14) the latter, as shown, being preferably a coil-spring mounted on the upper portion of bar R, the spring being confined upon bar R between the top of lateral arms R^2 and R^3 of the bar and the overhanging end T' of a bracket or arm, T, that is secured to the top of the rear side of box O, end T' of said arm or bracket being perforated, as at T^2 , to accommodate the vertical movement of bar R, bracket or arm T thus serving as a guide to assist in maintaining the verticality of arm R. The bed of the machine is of course slotted, as at a^3 , to accommodate the location and operation of cam-roller L and connected mechanism. Cam L' of the cam-roller has a slight depression, L^2 , extending transversely of the periphery of the cam. The office of this slight depression in the cam will be quite obvious when it is considered that it is desirable to

have uniformity in the impression of the matrix by the type-dies. Owing to peculiarities in the construction and shape of certain letters and characters and the consequent peculiarities in the displacement of the material of the matrix-blank or matrix by the dies adapted to impress such letters or characters, with a cam adapted to cause but one impulse to be given to the die there might be difficulty in obtaining uniformity in the impression of the matrix-blank or matrix by the various dies, and, I have found that with a slight depression in the cam as just described the prominence of the cam, that immediately follows such depression, causes a fresh or second impulse, as it were, to be given to the die, and affords the die an opportunity to prevent any inequality or irregularity in the impression of the matrix and causing the degree of successive impressions of successive dies to be uniform. The depression in the cam referred to, should of course not be so great as to cause a disturbance in the feeding-mechanism of the matrix-blank or matrix. Cam-roller L is also provided with a peripheral cam, as at L³, that is adapted to engage a roller, U', secured to the end of the power-arm of a lever, U, that is fulcrumed, at U², to any suitable support, for instance, to an upright or standard, U³, secured to plunger-case N. The weight-arm of lever U extends over the feeding-mechanism of the matrix-blank and terminates in a depending member, U⁴, that is, however, jointed as at U⁵. The lower section of depending member U⁴, at the lower end thereof, and preferably directly over the central portion of the path of the matrix-blank and in line with the operative type-die, is provided with a roller, U⁶, that is adapted to bear upon the matrix-blank or matrix. The arrangement of parts is such that cam L³ will actuate lever U to cause roller U⁶ to exert a pressure upon the matrix at the same time that the matrix receives the impression of the type-die, thus firmly holding the matrix while being impressed by the die. The lower section of depending member U⁴ extends through a sleeve U⁷, (see Fig. 14) secured to the top of the forward side of box O, whereby the verticality of the lower section of depending member U⁴ of lever U is maintained and roller U⁶, at all times, caused to rest, or bear, squarely upon the matrix-blank or matrix. A roller, W, (see Figs. 8 and 10) is located within box O directly above and transversely of the path of the matrix-blank and in advance of feed-roller S, roller W being trunnioned in the sides of box O and being adapted to rest and bear upon the matrix-blank and prevent the rear end of the latter from being lifted as it is received and fed by roller S, the trunnions of roller W being capable of slight vertical movement, however, the sides of box O being slotted or grooved for the purpose as at O⁵ (shown in dotted lines Fig. 8) to accommodate any slight irregularity or inequality in the thickness of the matrix-blank. Springs,

as at W', are provided, the same being secured, respectively, to the sides of box O, with the free ends thereof bearing upon the periphery of roller W. Suitable spacing-mechanism is provided for causing longer or shorter spaces to be made, for instance between words, or between characters, or letters, as required.

As shown in Fig. 8, and more clearly in Figs. 15, 16 and 17, X represents a lever fulcrumed to a suitable support, such, for instance, as a post or standard, X', rigid with the top of the rear side of box O, and the extremity of the weight-arm of lever X extends into a slot, R⁶, of bar R, and is adapted to engage the top wall of said slot. The power-arm of lever X extends through hollow posts, or barrels, as at Y Y' Y², that are preferably integral with a plate, Y³, rigidly secured to some suitable support, such, for instance, as the top of the rear side of box O. Lever X comprises preferably a flat bar, and upon the power-arm of lever X, within the respective barrels Y Y' Y², is seated a button, Z, the shank of the latter being comparatively long, and slotted, as at Z', (see Fig. 16) whereby the bifurcated shank is adapted to straddle lever X, the slot extending preferably to the lower extremity of the shank, but the latter does not extend to the bottom of the respective barrel and the barrel is vertically slotted at opposite sides, as at Y⁴, (see Fig. 15) with said slots extending below lever X sufficiently to enable the depression of the power-arm of lever X the distance required, whereby lever X, by depressing the proper button, will be actuated to lift or elevate bar R and connected matrix-feeding mechanism and cause the matrix to be fed the space desired, the latter being greater or less according to the distance the button aforesaid is located from the fulcrum of lever X and according to the proximity of the lower extremity of the shank of the button to the bottom of the respective barrel; hence, the provision of several buttons, Z, located at different intervals from the fulcrum of lever X and with the shank of the button in closer or less proximity to the bottom of the respective barrel. Referring to Fig. 15 of the drawings, button Z, seated upon lever X within barrel Y being the button located nearest to the fulcrum of lever X and with the lower extremity of its shank farthest from the bottom of the barrel, is adapted to actuate lever X to cause bar R and connected feed-mechanism to feed the matrix a greater distance than buttons Z in barrels, Y', Y², which latter buttons are located farther from the fulcrum of lever X with the shanks thereof nearer to the bottom of the respective barrels. A spring, as at Z², is mounted upon the shank of buttons Z and confined between lever X and bottom of the respective barrel, springs, Z², being adapted, respectively, to return the respective button to its normal position upon the removal of the pressure upon the button. In case more than one button, Z, is employed, as in the present instance, and as is desirable, slots Y⁴ in the sides of the respective

barrels, as already indicated, should of course extend sufficiently far below lever X to accommodate the movement of the latter in all cases. Shaft D (see Fig. 1) immediately forward of the rear sliding-box *d* has keyed or fastened thereto a collar, D', that in conjunction with collar D' immediately rearward of the forward sliding-box *d*, prevents endwise movement of shaft D.

Having thus described the construction and operation of the typographic mechanism, I will proceed with a description of the means and mechanism employed for operatively connecting with the typograph mechanism, suitable type-writer mechanism, whereby the operator, at all times, is enabled to see a proof of his work. Rear sliding-box *d* (see Fig. 1) has a rearwardly-extending arm or bracket 30, that terminates in a forked end 31, embracing the centrally reduced portion of the hub 32 of a bevel-gear, 33, that is mounted upon an upright shaft, 34, by the well known means of groove and feather, the groove and feather being of sufficient length to enable gear 33 to slide endwise of shaft 34 with the up-and-down movement of the supporting-bracket. Bevel-gear 33, meshes with a bevel-gear, 35, operatively mounted on the rear end of shaft D. Shaft 34 extends through bed A of the machine and through a sleeve of bracket, 36, rigidly secured to bed A aforesaid. Immediately below the sleeve of bracket 36, shaft 34 has keyed or rigidly mounted thereon a collar, 37, that prevents the shaft from moving upward, and above bracket 36, shaft 34 has rigidly mounted thereon a bevel-gear, 38, that meshes with a bevel-gear, 39, suitably mounted on a shaft, 40, that has suitable bearing in the upper member, 41, of a bracket or standard, 42, rigidly secured to bed A of the machine. Shaft 40, forward of its forward bearing, has operatively mounted thereon a spur-gear, 43, that meshes with a rack, 44, the latter (see Figs. 1, 18, 19 and 20) extending lengthwise the machine, and being secured at either end, preferably by means of screws, 45, to a block, 46, that extends longitudinally, and by means of rack 44 aforesaid, is adapted to be slid endwise of bed 47 of the type-writer mechanism, bed 47 being supported by and preferably integral with legs, 48, that are bolted or rigidly secured to bed A of the machine, bed 47 of the type-writer mechanism of course being located sufficiently far above the typographic mechanism underneath that the latter will not be interfered with. To render the travel of sliding-block 46 as easy as possible, bed 47 is grooved or recessed longitudinally as at 49, and block 46, at suitable intervals, on its under surface is provided with recesses or depressions, 50, that register with the longitudinal groove or recess 49 in bed 47, and fitting nicely between the opposing walls of recesses 50 and 49, and extending transversely of recess 49, are located rollers, 51. Sliding-block 46 also travels in contact with rollers 52 secured to bed 47 at suitable intervals along the sides of block 46. By this construction the travel of block 46 is not only rendered exceedingly easy, but comparatively noiseless. Block 46 is provided with a series of transverse grooves or recesses, 53, on its upper surface, within which grooves or recesses are nicely, but easily fitted, bars 54, the latter being adapted to slide endwise in said grooves or recesses, that are preferably of such depth as to receive bars 54 with the top surface thereof flush with the top surface of block 46. The type-lever-bars 54, at their forward end, terminate, respectively, in an upwardly-extending arm or member, 55, to the upper end of which is pivotally connected the power-arm of a curved type-lever, 56, levers 56, being fulcrumed upon a rod, 57, in common, the latter being supported, at either end, by an upwardly-extending arm or bracket, 58, rigidly secured to sliding block, 46, the latter being preferably flanged forwardly at either end, as at 59, and arms or brackets being screwed to the respective flange, as at 60 (see Figs. 19 and 20), collars as at 57^a being preferably mounted on rod 57 between levers 56, as shown. To prevent vertical motion of bars 54, within grooves or recesses 53 of sliding-block 46, is provided a cap-plate 61, that is secured, preferably by means of screws 62, (see Figs. 18 and 19) to block 46, at either end of the latter, and to render the endwise movement of bars 54 easy and comparatively noiseless, said bars are also caused to work upon rollers, as at 63, provided in recesses 64, in the upper and lower surfaces of said bars adjacent cap-plate 61 and sliding-block 46. (See Fig. 18.) The endwise movement of a bar 54 rearward causes the type-lever operatively connected with said bar to make its imprint on the paper in the paper-carriage hereinafter referred to, and this movement of bars 54 is effected by mechanism operatively connected with type-die plunger M of the typographic mechanism, as follows:—Type-die plunger M, at the rear end, (see Figs. 1, 18 and 21) has an upwardly-extending arm or member, 65, that is hollow or bored, as at 66. Type-die plunger-case N, is, of course, slotted, as at 67, to accommodate the location and movement of arm or member 65, but at either side of the latter is provided with an upwardly-projecting and laterally-slotted ear or member 68, the top and rear walls of slots 69 of members 68, being inclined or beveled, that is, sloping downward and rearward, as at 70. (Shown in dotted lines Fig. 1.) Within the bore of arm or member 65 is located a bolt, 71, the head of the latter, 72, being adapted to engage a notch, 73, in the lower surface of bar 54 immediately above. The shank of bolt 71, at the lower end, is provided, at either side, with a laterally-projecting pin, 74, that is adapted to ride up and down the sloping or inclined wall of the slot in the respective ear or member 68 of plunger-case N. Arm or member 65, is provided with inwardly-projecting shoulders 75, between which and head

72 of bolt 71, is confined a spring, 76, preferably a coil-spring as shown mounted upon the shank of bolt 71, said spring acting in the direction to retain the head of bolt 71 in its shot position. Cap-plate 61, at the rear end, (see Figs. 1, 18 and 19) has a depending flange, 77, that is perforated for the passage of pins or rods, 78, that are screwed into the respective bars 54, and upon rods or pins 78, between flange 77, and the respective bars 54, are mounted springs 79, adapted to act in the direction against bars 54. There are as many type-levers 56, as there are type-dies G in a set of type-dies in type-die-wheel or type die-carrier E of the typographic mechanism; each type-lever is provided with as many type as there are series of type-dies G, and the type carried by the type-levers, as to the letters or characters they are adapted to imprint, correspond to the type of those type-dies that have the same relative position in the series of type-dies that the type-lever has in the series of type-levers, and as type-die-wheel or carrier E is moved in the one direction or the other to bring a certain type-die into position for operation by manipulating arm I, the type-lever of the type-writer mechanism that carries the type-corresponding with the type-die thus brought into an operative position, is, by means of rack 44, (that as aforesaid is secured to sliding-block 46 that carries bars 54 with which the type-levers are operatively connected,) and intermediate gearing that operatively connects said rack with the shaft upon which type-die-wheel E is mounted, brought into an operative position; that is, bar 54 to which the type-lever in question is operatively connected, is brought into such position that when arm or member 65 of type-die-plunger, M, is caused to move forward with the type-die plunger as the latter is actuated by cam I' to cause the type-die to make an impression in the matrix-blank or matrix, as hereinbefore described, bolt 71, within member 65, will come under notch 73 of the respective type-lever-bar 54 and be shot by the action of the spring mounted on the shank of the bolt, and lock the respective type-lever-bar to type-die plunger M, whereupon, as the latter recedes, after having caused the respective type-die to make the desired impression in the matrix blank or matrix, the respective type-lever-bar will be moved rearward with the plunger and actuate the respective type-lever to make the desired imprint on the paper in the type-writer carriage hereinafter described, spring 79, at the rear of the respective type-lever-bar, of course, being compressed, and just as the type-lever has performed its functions, lateral pins 74 of bolt 71 will have moved down incline 70 of ears or members 68 of plunger-case N, and withdrawn bolt 71 from notch 74 in the type-lever-bar, permitting spring 79 aforesaid to return the type-lever-bar and type-lever to its normal position.

Having described the manner of operating

the type-levers of the type-writing mechanism, I will now proceed with a description of the mechanism for effecting the movement of the paper-carriage of the typewriter, both, horizontally, to present a fresh place for the type to strike, and, vertically, for the purpose hereinafter made more apparent. Referring first to the horizontal movement of the paper-carriage, that is effected by mechanism adapted to be operatively connected with the matrix-feeding-mechanism of the typographic mechanism, upon reference to Figs. 8, 14 and 22 of the drawings, it will be observed that lateral arm R³ of bar R is extended and connected, by means of a lateral pin, 80, with an annular disk, or ring, 81, loosely mounted on the periphery of a wheel or disk, 82, that is rotatably mounted upon a pin or stud, 83, projecting rearwardly from standard or bracket 84 rigid with the rear side of box O. Annular disk or ring 81, on its inner periphery, (see Fig. 22) has grooves or slots, 85, substantially the same as grooves or slots 7' of similar disks or rings in the matrix-feeding-mechanism hereinbefore described, having rollers, as at 86, and springs, as at 87, located within them, excepting that the arrangement of the reduced end of slots or grooves 85, rollers 86, and springs 87, relative to each other, is necessarily such that the elevation of arm R³ of bar R of the matrix feeding-mechanism aforesaid will move disk or ring 81 in the direction of the arrow and cause wheel or disk E² to move in a corresponding direction. Wheel or disk E² (see Figs. 14 and 22) is provided with a dog as at 88, that is adapted to engage a forwardly-projecting pin or lug 89, of a spur-gear, 90, that is rotatably secured to a depending arm or member 91, rigid with bed 47 of the type-writer mechanism. Gear 90, by means of dog 88 of wheel or disk 82 engaging pin or lug 89 of said gear, is thus caused to be rotated with the matrix-feeding-mechanism of the machine. Annular disk or ring 81, on either side, has secured thereto a circular plate, 92, that extends somewhat inside of the periphery of wheel or disk 82, and serves as a guard to prevent displacement of annular disk or ring 81, and rollers and springs, 86 and 87, respectively. It will also be observed that the axis of gear 90 and wheel or disk 82 are not coincident, and that the path of pin 89 of gear 90, and the path of dog 88 of wheel or disk 82, are eccentric to each other, and the arrangement of parts is such that once in a revolution of dog 88 and pin 89, said pin and dog will be disengaged for the purpose hereinafter made apparent. Gear 90 (see Figs. 7, 8, 14, and 22) meshes with a rack, 93, by means of which the horizontal movement of the paper-carriage of the type-writer mechanism is effected. To render the operation of the rack easy and comparatively noiseless, the rack, both at the rear and top works upon rollers, 94 and 95, secured, respectively, to the forward end and under side of horizontal member, 96, of an

L-shaped plate, the vertical member, 97, of which, is secured to the bed of the type-writing mechanism as at 98, shown in dotted lines Figs. 8 and 14. Rack 93 has upwardly and rearwardly-extending arms, 99, of such shape as to be out of the way of rollers, 95, and extending loosely through ears or sleeves, 100, rigid or integral with the end or side members of the paper-carriage of the type-writer mechanism, said carriage being mounted upon shafts 101 and 102, that extend lengthwise of the machine through the end or side-members of the carriage and have bearing, at either end, in a sliding-plate or block 103, secured to brackets 104, that are bolted, as at 104^b, to bed 47 of the type-writer mechanism, the paper-carriage being adapted to move endwise the machine with rack 93 aforesaid. The end or side-pieces of the paper-carriage, at the rear, are connected by one or more pieces, 105, (see Figs. 1 and 8) and with the latter compose a suitable frame-work for the carriage. Upon shaft 101, within the side or end members of the paper-carriage, is mounted the cylindrical platen 106, by the well known means of groove and feather, the groove extending the entire length of the horizontal travel of the carriage, and upon shaft 102, that is located at the rear of and above shaft 101, and also within the side or end members of the paper-carriage is loosely mounted a guide-roller, 107. Below and forward of cylindrical platen 106, the side or end members of the paper-carriage afford bearing for the trunnions of a paper-carrying-roller, 108. Rollers 107 and 108, and cylinder 106, are located in suitable proximity to each other, and the paper is fed from roller 108, between said roller and the cylindrical platen 106, under the latter, and up between the same and guide-roller 107, and over the cylindrical platen. The paper-carriage, in printing, is fed from right to left, rack 93 being connected with a spring or weight acting in the direction to return the paper-carriage to the place of beginning. For instance, as shown in Fig. 7, the bed of the type-writer mechanism, at the right hand end, is provided with an arm or bracket, 110, that has attached a roller or pulley, 111, and 112 represents a cord fastened to rack 93, and thence leading over said roller or pulley, and having attached, at its other or opposite end, a weight, 113, that acts to return the paper-carriage as aforesaid, bed A of the machine being of course perforated to accommodate the location of weight 113. The arrangement of parts is such that as the paper-carriage reaches the limit of its leftward movement dog 88 of wheel 82, and pin 89 of gear 90, become disengaged from each other, allowing weight 113 to return the paper-carriage to its place of beginning as aforesaid.

For rotating the paper-carriage the distance of a line-space mechanism is provided as follows:—114 represents a ratchet-wheel (see Figs. 7, 8, and 23) operatively mounted on the right hand end of shaft 101, and plate or block

103, secured to bracket 104, at the right hand end of the machine has a laterally and inwardly-projecting lug or member, 115, the free extremity whereof has pivoted thereto a bell-crank-lever 116, the latter, at its upper end, having pivotally attached a pawl, 117, that is adapted to engage the teeth of ratchet-wheel, 114. The right hand end or side member of the paper-carriage has a laterally-extending arm, 118, provided with an incline, as at 119, that, as the paper-carriage is returned to its place of beginning as aforesaid, is adapted to engage and actuate bell-crank-lever 116, to actuate pawl 117 in the direction to move ratchet-wheel 114, to rotate shaft 101 and cylindrical platen 106, as required, and feed the paper the distance of a line-space. The location of cylinder 106, relative to type-levers 56, is of course such that the latter will strike the paper on the cylinder as required. Each type-lever, however, as hereinbefore indicated, is provided with as many type as there are series of type-dies, G, in a set of type-dies, the type on the type-levers corresponding with the type of the dies that are located in the same radial plane. It will, therefore, be manifest that some suitable mechanism should be provided for moving the paper-carriage of the type-writer mechanism relative to the type-levers to bring the required type at the end of the type-lever in position for imprinting, and I provide as follows:—120 represents a vertically-sliding plate secured to the forward end of the bed of the type-writer mechanism, for instance, as shown, plate 120 (shown detached in Fig. 25) extending lengthwise of the machine and secured in place by cap-plates, 121, provided at either end of the machine, said cap-plates being screwed at the lower end directly to bed 47, as at 122 and at the upper end to upwardly-extending arms or standards, 123, of the bed, as at 124, (see Figs. 7 and 14,) cap-plates 121, of course being cut away, as at 125, to accommodate the up-and-down movement of sliding plate 120. L-shaped plate 96 that supports rollers 94 and 95, is slotted as at 126, to accommodate the movement of sliding-plate 120 and the latter has a depending arm or member, 127, that is slotted or cut away, as at 128, to accommodate the location and operation of lever U of the typographic mechanism. Depending member or arm 127, is provided, at its lower end, with a roller, 129, that (see Figs. 1 and 14) engages groove 130 in the respective segmental plate of the type-die-wheel or carrier of the typograph mechanism, each segmental plate being provided with a groove 130 extending from end to end of the plate and being concentric with the axis of the type-die-wheel, grooves 130 of the respective segmental plates E⁴ being in open relation with each other. It will thus be observed that sliding-plate 120 is moved up or down, according as the type-die-wheel or type-die-carrier of the typograph mechanism is elevated or lowered to bring a type-die of an-

other series of type-dies into position for operation. Sliding-plate 120, at either end thereof, is provided with a rack, 131. With racks 131 mesh, respectively, a toothed sector, 132, sectors 132 being loosely mounted, in common, upon a rod 133, that extends lengthwise of the machine, and has bearing in brackets 104. Toothed sectors 132, (see Figs. 1, 7, 14 and 23) are pivotally connected with sliding-plates or blocks 103, by means of a link, 134, sliding-plates 103 operating in suitably inclined recesses, 135, in the respective arms or brackets 104, and being held in place (see Figs. 23 and 24) by means of cap-plates or bars, 136, that are secured, preferably, by means of screws, to the respective brackets, sliding-plates or blocks 103 carrying the shafts that support the paper-carriage, as hereinbefore indicated, and it will readily be observed that by means of the mechanism just described, the paper-carriage is moved in an inclined plane and brought in the proper position to enable the paper on the cylindrical platen, to receive the imprint of the proper type of the type-levers,—that is, to receive the imprint of that type of the type-lever that corresponds to the type of the type-die that is in position for operation.

To the bed of the type-writer mechanism, at either side of depending member or arm 127 of vertically sliding plate 120, is secured a plate, 137, and at either end of the machine and in contact with the respective end of sliding-plate 120, is provided a roller, 138, that is secured to a laterally-projecting lug, 139, of upwardly-extending arm or member 123 of bed 47, rollers 138, and plates or bars 137, serving as guides for sliding-plate 120 in the up-and-down movement of the latter. The paper-carriage of the type-writer mechanism having been elevated, as hereinbefore described, by the elevation of the type-die-wheel of the typograph mechanism, upon again lowering said type-die-wheel or type-die-carrier, the paper-carriage of the type-writer mechanism will likewise be lowered, but to assist the return movement of the paper-carriage, arms 99 of rack 93, at their rear or upper end are provided, respectively, with a pin or shoulder, 140, between which and ear or sleeve 100 of the paper-carriage-frame, through which the respective arm of the rack passes, is mounted and confined upon said arm, a spring, as at 141, that is adapted to act in the direction to return the paper-carriage to its lowermost position.

What I claim is—

1. In a typograph machine, a shaft, a type-die-wheel loosely mounted on said shaft and carrying two or more sets of type-dies, the type-dies of the respective sets of type-dies being arranged in series concentric with the axis of the wheel, said shaft having bearing in sliding-boxes, of suitable means whereby said sliding-boxes and type-die-wheel may be elevated or lowered, and suitable means for

locking said wheel to the shaft, substantially as and for the purpose set forth.

2. In a typograph machine, the bed whereof is supported upon two pairs of legs, as at A', said legs having inwardly-extending arms, as at A², sliding-boxes, as at d, adapted to slide up and down between the inwardly-extending arms of the respective pairs of legs, a shaft having bearing in said boxes, a type-die-wheel, substantially as indicated, mounted upon said shaft, suitable means whereby said wheel may be rotated and suitable means whereby said sliding-boxes may be elevated and lowered as required, substantially as and for the purpose set forth.

3. In a typograph machine, the bed whereof is supported upon two pairs of legs, as at A', said legs having inwardly-extending arms, as at A², sliding-boxes, as at d, adapted to slide up and down between the inwardly-extending arms of the respective pairs of legs, a shaft having bearing in said boxes, a type-die-wheel mounted on said shaft, and carrying or adapted to carry type-dies arranged substantially as indicated, suitable means whereby said wheel can be turned on its axis, suitable lever-mechanism for elevating said sliding-boxes, and springs acting in the direction to lower said boxes, substantially as and for the purpose set forth.

4. In a typograph machine, vertically-sliding-boxes, a shaft having bearing in said boxes, a type-die-wheel mounted on said shaft and carrying or adapted to carry several sets of type-dies with the dies arranged in series substantially as indicated, suitable lever-mechanism adapted to elevate said sliding-boxes, and suitable means for locking said lever-mechanism in the desired adjustment of the parts, substantially as and for the purpose set forth.

5. In a typograph machine, vertically-sliding-boxes, a shaft having bearing in said boxes, a type-die-wheel mounted on said shaft, and carrying or adapted to carry several sets of type-dies with the dies of a set arranged in two or more series concentric with the axis of the wheel, suitable lever-mechanism for elevating said sliding-boxes, suitable means for locking said lever-mechanism in the desired adjustment of the parts, and springs adapted to act in the direction to lower said sliding-boxes, substantially as and for the purpose set forth.

6. In a typograph machine, two pairs of supporting-legs, as at A', the respective pairs of legs having inwardly-extending arms, as at A², sliding-boxes adapted to move up and down between the inner ends of the inwardly-extending arms, a shaft having bearing in said sliding-boxes and a type-die-wheel, substantially as indicated, suitably mounted on said shaft, suitable lever-mechanism connected with the legs at one side of the machine and adapted to elevate said sliding-boxes, suitable means for locking said lever-mech-

anism in the desired adjustment, and springs adapted to act in the direction to lower said sliding-boxes, substantially as set forth.

7. In a typograph machine, vertically-sliding-boxes, suitable means for guiding said sliding-boxes in their up and down movement, a shaft having bearing in said boxes, a type-die-wheel suitably mounted on said shaft and carrying or adapted to carry two or more sets of type-dies with the dies arranged in series substantially as indicated, suitable lever-mechanism adapted to elevate said sliding-boxes and adapted to be operated from the front of the machine, and suitable means for locking said lever-mechanism in the desired adjustment of the parts, substantially as set forth.

8. In a typograph machine, one of the forward supporting-legs or members of which is provided with holes, as at a' , a type-die-wheel adapted to be moved in a vertical plane and carrying or adapted to carry two or more sets of type-dies arranged in series, substantially as indicated, suitable lever-mechanism whereby said vertical movement of the type-die-wheel may be effected and suitable means connected with said lever-mechanism and adapted to lock the same in the desired adjustment, said locking means comprising a pin or bolt adapted to enter either or any of holes a' in the forward supporting member aforesaid, the arrangement of holes a' being such that the type-die-wheel is elevated or lowered according as said lever-mechanism is actuated to move said pin or bolt of the locking means from its engagement with the one to another of holes a' aforesaid, substantially as and for the purpose set forth.

9. In a typograph machine, vertically-sliding-boxes, a shaft having bearing in said boxes and a type-die-wheel loosely mounted on said shaft and suitable means for preventing said type-die-wheel from moving endwise said shaft, said type-die-wheel carrying two or more sets of type-dies, said sets of type-dies being located in the same circular plane with the dies thereof arranged in series concentric with the axis of the wheel, a collar rigid with the shaft, immediately forward of the hub of the wheel, and suitable means whereby said wheel is adapted to be locked to said collar in as many different positions as there are sets of type-dies, substantially as and for the purpose set forth.

10. In a typograph machine, a shaft, as at D, a type-die-wheel loosely mounted on said shaft, suitable means for preventing said type-die-wheel from moving endwise on said shaft and comprising a collar rigid with said shaft immediately forward of the hub of said wheel, said hub being provided with tapering holes or perforations, as at e' , and the collar aforesaid being provided with a suitable pin or peg, as at H, adapted to enter any of said holes or perforations e' and lock said type-die-wheel to said collar, and a spring acting in the direction to retain said pin or peg in en-

gagement with the respective hole or perforation e' , substantially as and for the purpose set forth.

11. In a typograph machine, a shaft, as at D, a type-die-wheel loosely mounted on said shaft, said type-die-wheel carrying two or more sets of type-dies, said sets of type-dies being located in the same circular plane with the dies thereof arranged in series concentric with the axis of the wheel, suitable means for preventing said type-die-wheel from moving endwise on said shaft, and comprising a collar rigid with the shaft, immediately forward of the hub of the wheel, said hub having a lateral hole or perforation for each set of type-dies and said collar having a lateral perforation adapted to register with the respective holes or perforations in the hub of the wheel, a pin or peg adapted to enter said perforations, and lock the type-die-wheel in the desired adjustment, substantially as set forth.

12. In a typograph machine, a type-die adapted to impress the matrix-blank or matrix, in combination with suitable type-die actuating mechanism adapted to engage, actuate and cause a second impulse to be given to the die during the latter's impression of the matrix-blank or matrix, and suitable means for returning the type-die and its actuating mechanism to their normal position, substantially as and for the purpose set forth.

13. In a typograph-machine, a type-die adapted to impress the matrix-blank or matrix, in combination with mechanism, substantially as shown, for engaging, actuating and causing a second impulse to be given to the type during the latter's impression of the matrix-blank or matrix, substantially as and for the purpose set forth.

14. In a typograph machine, the combination with type-die, of an upright feed-bar, as at R, feed-rollers, as at S S' and a conveyer-belt, as at P, said feed-rollers, feed-bar and conveyer-belt being operatively connected with each other, the type-die being adapted to engage the lower end of the feed-bar and thereby actuate the feeding-mechanism, substantially as set forth.

15. In a typograph machine, a type-die adapted to impress the matrix-blank or matrix, and provided with a laterally-projecting nose or rib, in combination with suitable mechanism for feeding the matrix-blank or matrix, said feeding-mechanism comprising an upright bar or member terminating at its lower end in a bevel or incline adapted to be engaged by said nose or rib of the type-die preparatory to the impression of the matrix-blank or matrix and suitable means for maintaining the verticality of said upright bar or member of the feeding mechanism, said feeding-mechanism also comprising feed-rollers located at opposite sides of the line of endwise travel of the type-die and adapted to take hold on the matrix-blank or matrix, substantially as set forth.

16. In a typograph machine, a type-die

adapted to impress the matrix-blank or matrix, and provided with a laterally-projecting nose or rib, in combination with suitable mechanism for feeding the matrix-blank or matrix, said feeding mechanism comprising an upright bar or member terminating at its lower end in a bevel or incline adapted to be engaged by said nose or rib of the type-die preparatory to the impression of the matrix-blank or matrix, and suitable means for maintaining the verticality of said upright bar or member of the feeding mechanism, said feeding-mechanism also comprising feed-rollers located at opposite sides of the line of endwise travel of the type-die and adapted to take hold on the matrix blank or matrix, and a conveyer-belt adapted to feed the matrix-blank or matrix to the adjacent feed-roller, said upright bar or member, feed-rollers, and conveyer-belt being operatively connected with each other, substantially as set forth.

17. In a typograph machine, a type-die adapted to impress the matrix-blank or matrix, in combination with suitable mechanism for feeding the matrix-blank or matrix, said mechanism comprising an upright bar or member, as at R adapted to be engaged and elevated by the type-die preparatory to the impression of the matrix-blank or matrix by the die, feed-rollers, as at SS', located at opposite sides of the line of endwise travel of the type-die, and suitable mechanism adapted to communicate motion from said upright bar or member to said feed-rollers, and comprising an annular disk or ring loosely mounted on the respective feed-rollers, and suitable means for temporarily establishing frictional contact between said annular disks or rings and the respective feed-rollers, substantially as and for the purpose set forth.

18. In a typograph machine, a type-die adapted to impress the matrix-blank or matrix, in combination with suitable mechanism for feeding the matrix blank or matrix, said mechanism comprising an upright bar or member, as at R adapted to be engaged and elevated by the type-die preparatory to the impression of the matrix-blank or matrix by the die, feed-rollers, as at SS', located at opposite sides of the line of endwise travel of the type-die and suitable means operatively connecting said feed-rollers, with said upright bar or member, said connecting-means comprising an annular disk or ring mounted on the respective feed-rollers outside the line of travel of the matrix-blank or matrix, and provided with curved grooves or slots on the inner periphery, a pin or roller located within the respective grooves or slots, and a spring located between the respective pins or rollers and the adjacent wall of the respective groove or slot opposite to the direction in which said annular disks or rings move to feed the matrix-blank or matrix, said springs being adapted to act in the direction to wedge the respective pin or roller within the reduced portion of the respective groove or slot, between the periphery

of the respective feed-roller, and the opposing wall of said groove or slot, substantially as and for the purpose set forth.

19. In a typograph machine, a horizontal reciprocating type-die adapted to impress the matrix-blank or matrix, and provided with a laterally-projecting rib or nose at its forward end, in combination with suitable mechanism for feeding the matrix-blank or matrix and comprising a bar or member provided with a bevel or incline adapted to be engaged by said nose or rib of the type-die, and feed-rollers operatively connected with said bar or member, the periphery of said feed-rollers being milled or knurled or provided with suitable projections whereby said rollers are adapted to take a positive hold upon the matrix blank or matrix, substantially as set forth.

20. In a typograph machine, a cam and a lever, as at U, actuated by said cam, said lever being fulcrumed to any suitable support, and terminating at its forward end in a depending member, as at U¹, the latter at its lower extremity being provided with a roller adapted to bear upon the matrix-blank or matrix, substantially as described, in combination with suitable means for maintaining the verticality of said depending member of the lever, substantially as set forth.

21. In a typograph machine, a type-die adapted to impress the matrix-blank or matrix, and provided with a laterally projecting nose or rib, as at O, open at the ends and top, suitable mechanism for feeding the matrix-blank or matrix and comprising an upright bar or member, as at R, extending into a vertical bore or perforation in the rear wall of said box, and being provided at its lower end with a bevel or incline, substantially as indicated, adapted to be engaged and elevated by said rib or nose of the type-die preparatory to the impression of the matrix-blank or matrix, the rear side of said box being perforated laterally with the perforation in open relation with the vertical perforation or bore aforesaid, said lateral perforation being funnel-shaped with the smaller end next adjacent to the path of the matrix-blank or matrix and just large enough to accommodate the passage of the type-die, said rear wall of the box aforesaid also having a slot in open relation with said last mentioned perforation and of such size as to accommodate the reception of the nose or rib of the type-die aforesaid, substantially as set forth.

22. In a typograph machine, a horizontal reciprocating type-die adapted to impress the matrix-blank or matrix and provided with a laterally-projecting nose or rib, G³, of suitable mechanism for feeding the matrix-blank or matrix, said feeding-mechanism comprising a conveyer-belt, an upright bar or member operatively connected with said conveyer-belt and provided at its lower end with a bevel or incline adapted to be engaged by said rib or nose of the type-die, and suitable means for positively returning said upright bar or mem-

ber and attachments to their normal position immediately upon the recession of the type-die from the matrix-blank or matrix, substantially as set forth.

23. In a typograph-machine, the combination with mechanism for feeding the matrix-blank or matrix and comprising a conveyer-belt, feed-rollers operatively connected with said conveyer-belt, an upright bar or member, as at R operatively connected with said feed-rollers, said upright bar or member at its lower end being provided with a bevel or incline of type-dies having, respectively, a laterally-projecting member, as at G³, for actuating said feed-bar, substantially as and for the purpose set forth.

24. In a typograph machine, suitable mechanism for feeding the matrix-blank or matrix, said mechanism comprising two feed rollers located, respectively, at opposite sides of the point at which the matrix-blank or matrix receives its impression and suitable means for bearing upon the matrix preparatory to its delivery to said feed-rollers, said means comprising a roller extending transversely of the path of the matrix-blank or matrix, and one or more springs bearing downward on said roller, substantially as and for the purpose set forth.

25. In a typograph machine, suitable mechanism for feeding the matrix-blank or matrix, said mechanism comprising two feed rollers located, respectively, at opposite sides of the point at which the matrix-blank or matrix receives its impression, a roller adapted to bear upon the matrix preparatory to its delivery to said feed rollers, said roller having a limited upward movement, substantially as and for the purpose set forth.

26. In a typograph machine, the combination with suitable mechanism for feeding the matrix-blank or matrix, of a spacing-lever, as at X, adapted to actuate said feeding-mechanism, buttons, as at Z, seated upon the power-arm of said lever, and adapted respectively to be pressed downward, the arrangement and construction of said buttons, relative to each other, being such that said feeding-mechanism is actuated more or less according to the button receiving the downward pressure, and one or more springs adapted to return the spacing-lever to its normal position, substantially as set forth.

27. In a typograph machine, the combination, with suitable mechanism for feeding the matrix-blank or matrix and comprising an upright bar or member, as at R, of a spacing-lever, as at X, adapted to lift or elevate said bar, hollow-posts or barrels, as at Y Y' Y², buttons, as at Z, seated upon the power-arm of said spacing-lever within the respective barrels, the barrels and shanks of the buttons being slotted, substantially as indicated, and the power-arm of the spacing lever extending through said slots, the shanks of said buttons terminating at different distances, relative to each other, below the spacing-lever, and a

spring mounted upon the shank of the buttons between the spacing-lever and bottom of the respective barrel, substantially as and for the purpose set forth.

28. The combination with the type-die-carrier of a typograph-machine, of typewriter mechanism comprising a series of type-levers operatively connected with said type-die-carrier in such a manner that the movement of said type-die carrier in the one direction or the other will cause said type-levers to be moved sidewise, the arrangement of parts being such that the corresponding type-die and type-lever will simultaneously be brought into position for operation, substantially as set forth.

29. In combination with a typograph machine comprising type-die supporting-members adapted to be moved in a circular plane, of typewriter mechanism comprising a series of type-levers operatively connected with said type-die supporting members in such a manner that the movement of said type-die supporting-members in the one direction or the other will cause said type-levers to be moved sidewise, the arrangement of parts being such that the corresponding type-die and type-lever will simultaneously be brought into position for operation, substantially as set forth.

30. The combination with the type-die-carrier of a typograph-machine of type-writer mechanism and suitable mechanism operatively connecting the type-writer mechanism with the aforesaid type-die-carrier, said typewriter mechanism comprising a supporting-bed, as at 47, rigid with the supporting-bed of the typograph machine, a sliding-block adapted to move endwise bed 47, a series of type-lever bars supported transversely of said block, a series of type-levers fulcrumed to any suitable support and operatively connected with the respective type-lever-bars, a rack connected with and extending lengthwise of said sliding-block and in mesh with a gear of said connecting-mechanism, substantially as set forth.

31. The combination, with the type-die-carrier of a typograph-machine, of type-writer mechanism, and suitable mechanism operatively connecting the type-writer mechanism with the aforesaid type-die-carrier, said typewriter mechanism comprising a sliding block, as at 46, a series of type-lever-bars supported transversely of said sliding-block, a series of type-levers fulcrumed to any suitable support and operatively connected with the respective type-lever-bars, a rack extending lengthwise and adapted to communicate motion to said sliding-block from the connecting mechanism aforesaid, said connecting-mechanism comprising a horizontal shaft, as at 40, intergeared with said rack and with an upright shaft, as at 34, the latter being operatively connected with the type-die-carrier, substantially as set forth.

32. The combination, with a typograph machine comprising a vertically sliding-shaft

and a type-die-wheel suitably mounted on said shaft, said type-die-wheel carrying two or more sets of type-dies with the dies arranged concentric with the axis of the wheel, of suitable type-writer mechanism comprising a series of type-levers provided, respectively, with as many type as there are series of type-dies in a set of type-dies of the type-die-wheel and suitable mechanism operatively connecting said type-levers with the type-die-wheel supporting-shaft in such a manner that the type-die-wheel may be elevated without operatively disconnecting the type-writer mechanism, substantially as and for the purpose set forth.

33. The combination with the type-die-carrier of a typograph-machine, of suitable type-writer mechanism comprising a supporting-bed, as at 47, a sliding-block, as at 46, operatively connected with the aforesaid type-die-carrier and adapted to move endwise on said bed upon and between rollers arranged at suitable intervals lengthwise said block, said block having grooves on its upper side and extending transversely thereof, type-lever-bars supported in the respective grooves and type-levers operatively connected with the respective type-lever-bars, substantially as set forth.

34. The combination with the type-die-carrier of a typograph-machine, of suitable type-writer mechanism, comprising a supporting-bed, as at 47, a sliding-block, as at 46, adapted to move endwise on said bed, said sliding-block being operatively connected with the type-die carrier aforesaid, having grooves or recesses on its upper side and extending transversely thereof, type-lever-bars supported in said respective grooves or recesses, a cap-plate, as at 61, adapted to hold said type-lever-bars to their seats in said grooves or recesses of the sliding-block, and type-levers operatively connected with said type-lever-bars, substantially as set forth.

35. The combination with the type-die-actuating-mechanism, of a typograph machine and type-writer mechanism comprising a series of type-levers, of suitable mechanism operatively connected with the aforesaid type-die-actuating mechanism for actuating said type-levers to cause the latter to make their imprint, substantially as set forth.

36. The combination with the type-die-actuating-mechanism, of a typograph-machine and the type-levers of typewriter mechanism, of suitable mechanism operatively connected with said type-die actuating mechanism and adapted to actuate said type-levers, the arrangement of parts being such that the imprint by the type-levers will follow the impression of the matrix-blank or matrix by the corresponding type-die, substantially as set forth.

37. The combination with cam-actuated mechanism for actuating the type-dies of a typograph-machine and typewriter mechanism comprising a series of type-levers, of suitable

means operatively connected with the type-die actuating mechanism and adapted to actuate said type-levers, the arrangement of parts being such that the imprint of a type-lever will immediately follow the impression of the matrix-blank or matrix by the corresponding type-die, substantially as set forth.

38. The combination with a typograph machine comprising a cam-and-spring-actuated plunger adapted to engage and actuate the type-die substantially as indicated, and type-writer mechanism comprising a series of type-lever-bars and a series of type-levers operatively connected with said type-lever-bars, the latter being notched, respectively, on their under surface, the type-die-actuating plunger aforesaid having an upwardly-extending arm or member, of suitable mechanism adapted to operatively connect said type-lever-bars and type-die-actuating plunger, said connecting mechanism comprising a bolt located within said upwardly-extending arm or member of the plunger with the head thereof adapted to engage the notch in the under side of the type-lever-bar immediately above said bolt, an incline located at one or either side of said bolt, the latter having a lateral pin or pins adapted to engage and ride upon said incline or inclines, and a spring acting in the direction to retain the bolt in its shot position, substantially as set forth.

39. The combination with the type-die-actuating mechanism of a typograph-machine and type-levers of typewriter mechanism of suitable means operatively connected with the type-die actuating mechanism and adapted to actuate the aforesaid type-levers and a spring for each type-lever adapted to act in the direction to return said lever to its normal position, substantially as set forth.

40. In combination with a typograph machine comprising suitable mechanism for actuating the type-dies, of typewriter mechanism comprising a series of type-lever-bars and a series of type-levers operatively connected with said type-lever-bars, suitable mechanism adapted to operatively connect said type-lever-bars with the aforesaid type-die-actuating mechanism, and a spring for each type-lever-bar and adapted to act in the direction to retain said bar in its normal position, said type-lever-bars being adapted to travel on rollers, substantially as and for the purpose set forth.

41. In combination with a typograph machine comprising suitable type-die-supporting members or a type-die-carrier movable in a vertical plane, of type-writer mechanism comprising a paper-carriage, and suitable means operatively connecting said paper-carriage with the type-die carrier, whereby the paper carriage will be elevated or lowered with the raising or lowering of the type-die carrier, substantially as set forth.

42. The combination with a typograph-machine comprising a type-die-carrier movable in a vertical plane, of a typewriter compris-

ing a paper-carriage and one or more reciprocating racks operatively connected with the type-die-carrier and with the paper-carriage, the arrangement of parts being such that the paper-carriage is elevated or lowered with the type-die-carrier, substantially as and for the purpose set forth.

43. The combination with a typograph-machine comprising a type-die-carrier movable in a vertical plane, of a typewriter comprising a paper-carriage, a vertically reciprocating slide, one or more racks rigid or integral with said slide, a toothed sector in mesh with said rack or racks and operatively connected with the paper-carriage, the arrangement of parts being such that the paper-carriage is elevated or lowered with the type-die-carrier, substantially as and for the purpose set forth.

44. The combination with a typograph-machine comprising a type-die-carrier movable in a vertical plane, and a typewriter comprising a supporting-bed, as at 47, provided with forwardly extending arms or brackets, as at 104, and slides adapted to slide in an inclined plane up and down said arms or brackets and operatively connected with the paper-carriage, of one or more reciprocating racks operatively connected with the type-die-carrier and operatively connected with said slides, the arrangement of parts being such that the paper-carriage and type-die-carrier are elevated and lowered simultaneously, substantially as and for the purpose set forth.

45. The combination with a typograph-machine comprising a type-die-carrier movable in a vertical plane, of a typewriter comprising a bed and vertically-reciprocating slide secured to said bed and operatively connected with the type-die-carrier, and a paper-carriage operatively connected with said slide in such a manner that said carriage is elevated or lowered with the elevation or descent of the type-die-carrier, substantially as set forth.

46. In combination with a typograph machine, a type die-wheel carrying sets of type-dies, arranged, respectively, in two or more series concentric with the axis of the wheel, said type-die-wheel being adapted to be raised or lowered, of type-writer mechanism comprising a paper carriage and a series of type-levers provided, respectively, with as many type as there are series of type-dies in a set of type-dies carried by the type-die-wheel aforesaid, and suitable mechanism connecting said paper-carriage with the type-die-wheel in such a manner that said type-die-wheel and paper-carriage are elevated or lowered simultaneously, said connecting mechanism comprising a vertically-sliding-plate, provided with a rack at or near either end of said plate, a sector in mesh with the respective racks and suitable means operatively connecting said sector with the sliding carriage, substantially as and for the purpose set forth.

47. In combination with a typograph machine comprising a type-die-wheel substantially as indicated, and having a groove as at

130, concentric with the axis of the wheel, and typewriter mechanism comprising a paper-carriage and a series of type-levers, provided, respectively, with as many type as there are series of type-dies in a set of type-dies of the type-die-wheel aforesaid, of suitable mechanism operatively connecting said paper-carriage and type-die-wheel and comprising a vertically-sliding-plate, as at 120, terminating at its lower extremity in a roller in engagement with the said groove in the type-die-wheel aforesaid, a rack rigid or integral with said vertically-sliding-plate at or near either end of the same, a sector in mesh with the respective racks and suitable means operatively connecting said sectors and the paper-carriage aforesaid, substantially as and for the purpose set forth.

48. The combination with a typograph machine comprising a type-die-wheel carrying two or more sets of type-dies arranged in series concentric with the axis of the wheel, of type-writer-mechanism comprising a supporting-bed, 48, a longitudinal plate, as at 120, adapted to slide up and down the forward end of said bed, racks, 131, rigid or integral with said sliding-plate, forwardly-extending brackets, 104, rigid with said supporting-bed, sectors, 132, in mesh with said racks and pivotally connected with said forwardly-extending brackets, said brackets having recesses, 135, plates or blocks, 103, adapted to slide endwise said recesses, and afford bearing for the supporting shafts of the cylindrical platen and paper-guide-roller of the paper-carriage, and links, 134, connecting said sliding-plates or blocks, 103, with the respective sector 132, aforesaid, substantially as and for the purpose set forth.

49. The combination with a typograph machine comprising a type-die-wheel carrying two or more sets of type-dies with the type-dies arranged in series concentric with the axis of the wheel, said type-die-wheel having a groove, as at 130, also concentric with the axis of the wheel, of type-writer mechanism comprising a supporting bed, 47, a longitudinal vertically-sliding-plate, 120, provided with a roller or suitable member in engagement with the groove in the type-die-wheel aforesaid, guides, 124, and 137, racks, 131, sectors, 132, sliding-plates or blocks, 103, a paper-carriage, the shafts of the cylindrical platen and paper-guide-roller whereof have bearing in said last-mentioned sliding-plates or blocks, and links 134, substantially as and for the purpose set forth.

50. In combination with a typograph machine comprising suitable type-die-supporting members or a type-die-carrier movable in a vertical plane, of typewriter-mechanism comprising a paper-carriage, and suitable means operatively connecting said paper-carriage with the type-die carrier, whereby the paper-carriage will be elevated or lowered with the raising or lowering of the type-die carrier, and one or more springs adapted to act in

the direction to return said paper-carriage to its lowermost position, substantially as set forth.

51. The combination with the matrix-feed-
 5 ing-mechanism of a typograph-machine, of
 typewriter mechanism comprising a paper-
 carriage and suitable means adapted to op-
 10 eratively connect said paper-carriage with
 the matrix-feeding mechanism aforesaid and
 advance said paper-carriage as required, said
 connecting means comprising a wheel, as at
 90, operatively connected with the paper-car-
 riage and provided with a pin or lug, as at
 89, and a wheel or disk as at 82, operatively
 15 connected with the matrix feeding mechan-
 ism and having a dog, as at 88, adapted to
 engage the pin or lug of the wheel aforesaid,
 substantially as and for the purpose set forth.

52. The combination with the matrix-feed-
 20 ing-mechanism of a typograph machine, of
 typewriter-mechanism comprising a paper-
 carriage and suitable means adapted to op-
 eratively connect said paper-carriage with
 the matrix-feeding-mechanism aforesaid and
 25 advance said paper-carriage as required, said
 connecting-mechanism comprising a rack, 93,
 a gear-wheel 90, in mesh with said rack, and
 provided with a pin or lug, as at 89, an an-
 nular disk or ring 86, operatively connected
 30 with the matrix-feeding-mechanism, a wheel
 or disk, 82, located within said annular disk

or ring, slots, 85, on the inner periphery of
 said annular disk or ring, rollers, 86, and
 springs, 87, located within the respective
 slots, all substantially as indicated, wheel or 35
 disk 82 being arranged eccentric with gear
 90 and having a dog, as at 88, adapted to en-
 gage pin or lug 89 of gear 90, substantially as
 and for the purpose set forth.

53. The combination with the matrix-feed- 40
 ing-mechanism of a typograph machine, of
 typewriter-mechanism comprising a paper-
 carriage and suitable means adapted to op-
 eratively connect said paper-carriage with
 the matrix-feeding-mechanism aforesaid and 45
 advance said paper-carriage as required, said
 connecting-mechanism comprising a rack and
 gear, as at 93 and 90, and suitable means
 adapted to communicate motion from said
 matrix-feeding-mechanism to said gear, the 50
 paper-carriage at either end having boxes or
 sleeves and the rack having arms, as at 99, ex-
 tending through the respective box or sleeve,
 substantially as and for the purpose set forth.

In testimony whereof I sign this specifica- 55
 tion, in the presence of two witnesses, this 16th
 day of February, 1892.

EMIL WERNER.

Witnesses:

C. H. DORER,
 WARD HOOVER.