

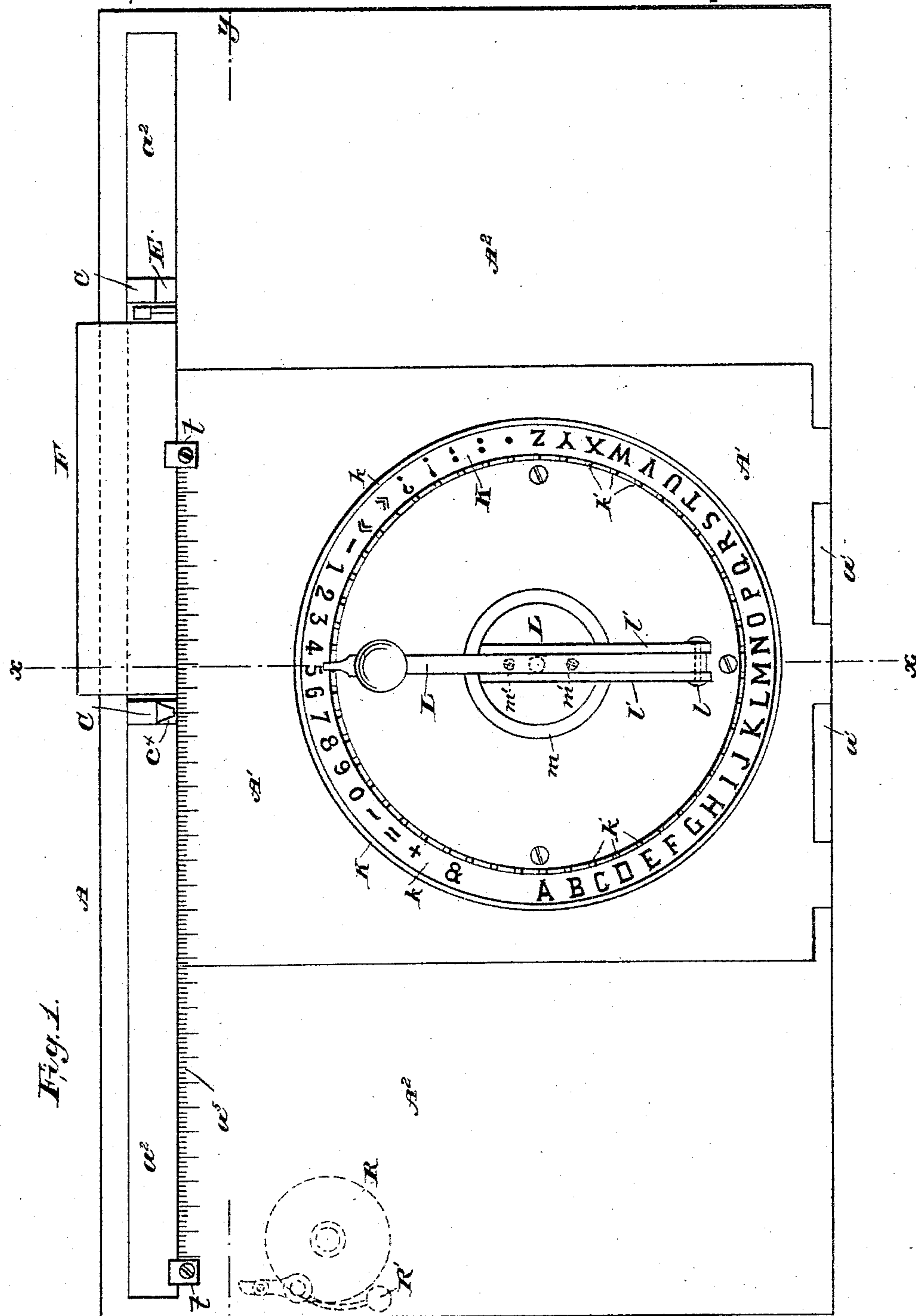
(No Model.)

4 Sheets—Sheet 1.

T. E. ENJALBERT.  
TYPE WRITING MACHINE.

No. 369,401.

Patented Sept. 6, 1887.



Attest:  
W. C. Butler,  
Wm. R. Davis.

Inventor  
Thophile C. Enjalbert,  
per Henry M. [unclear] his atty

(No Model.)

4 Sheets—Sheet 2.

T. E. ENJALBERT.  
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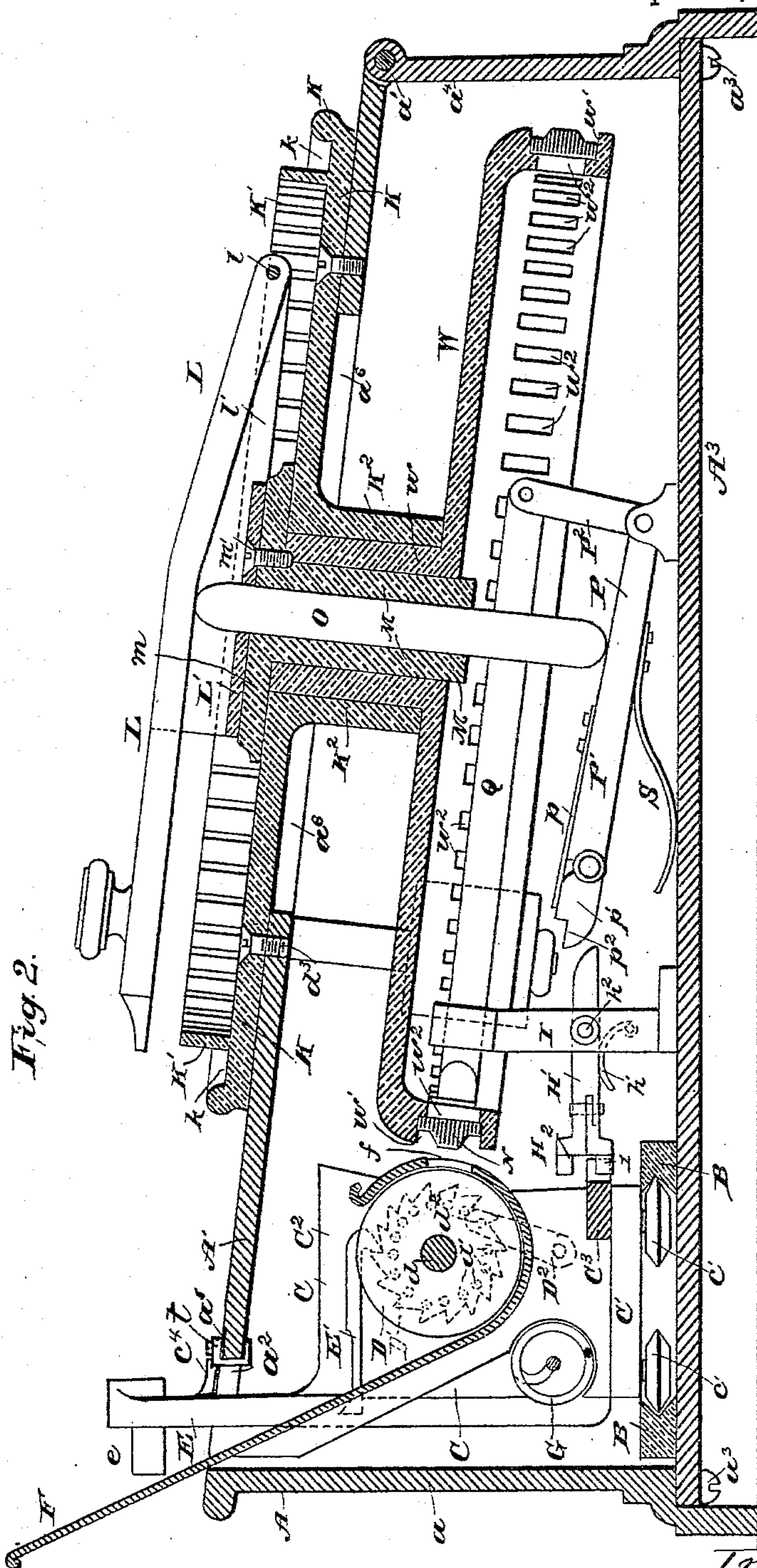


Fig. 2.

Attest:-  
W. E. Boulter  
Wm R. Davis.

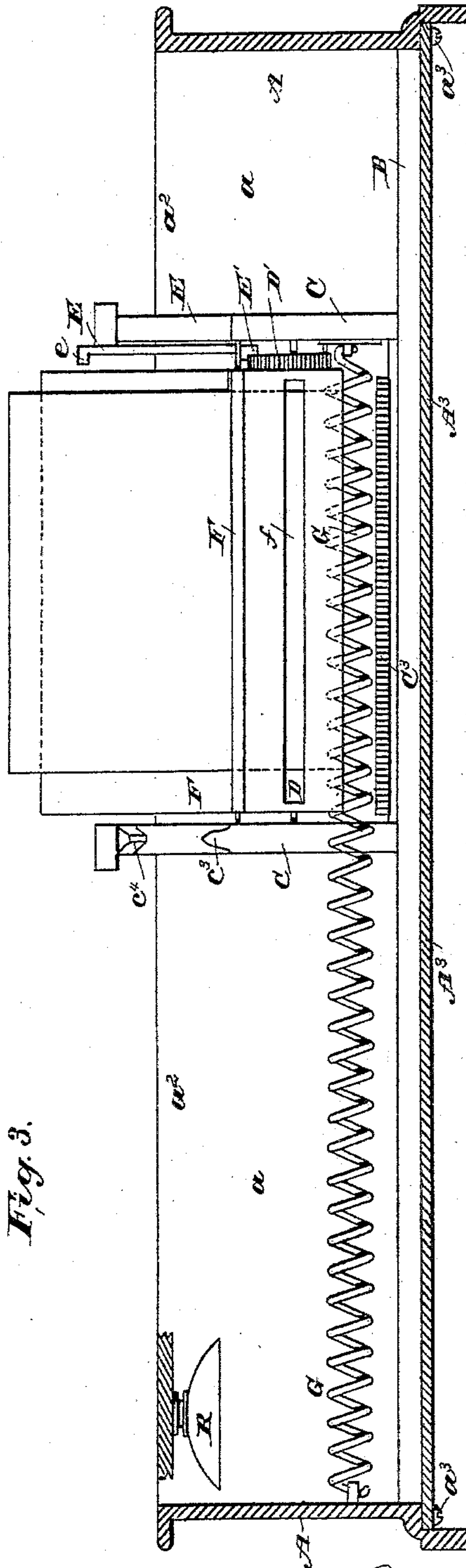
Inventor  
Theophile E. Enjalbert,  
per Henry M. [Signature]  
his atty.



4 Sheets—Sheet 3.

Patented Sept. 6, 1887.

No. 369,401.



*Inventor*  
*Theophile C. Enjalbert,*  
*per Henry Bth*  
*Privately*

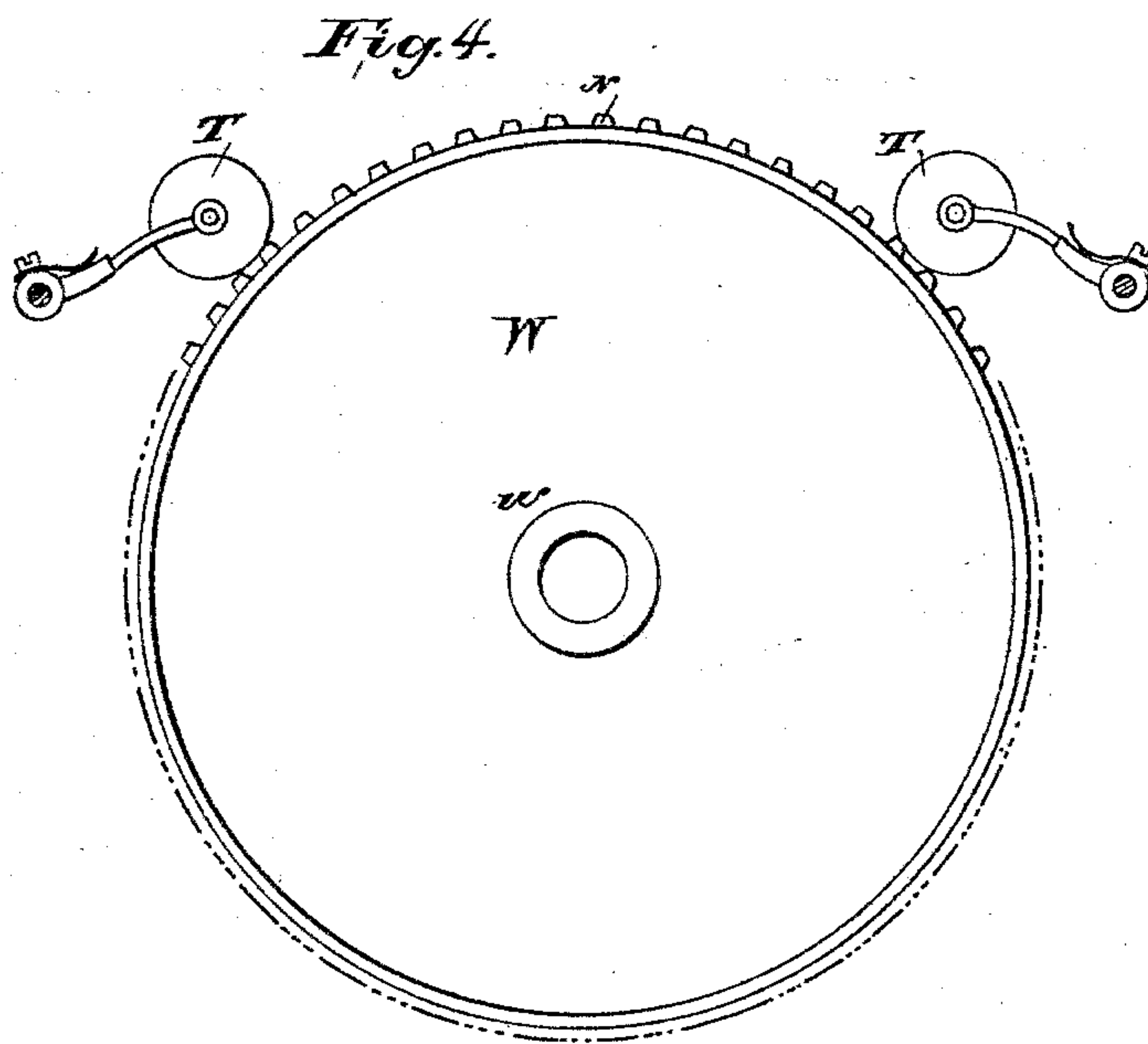
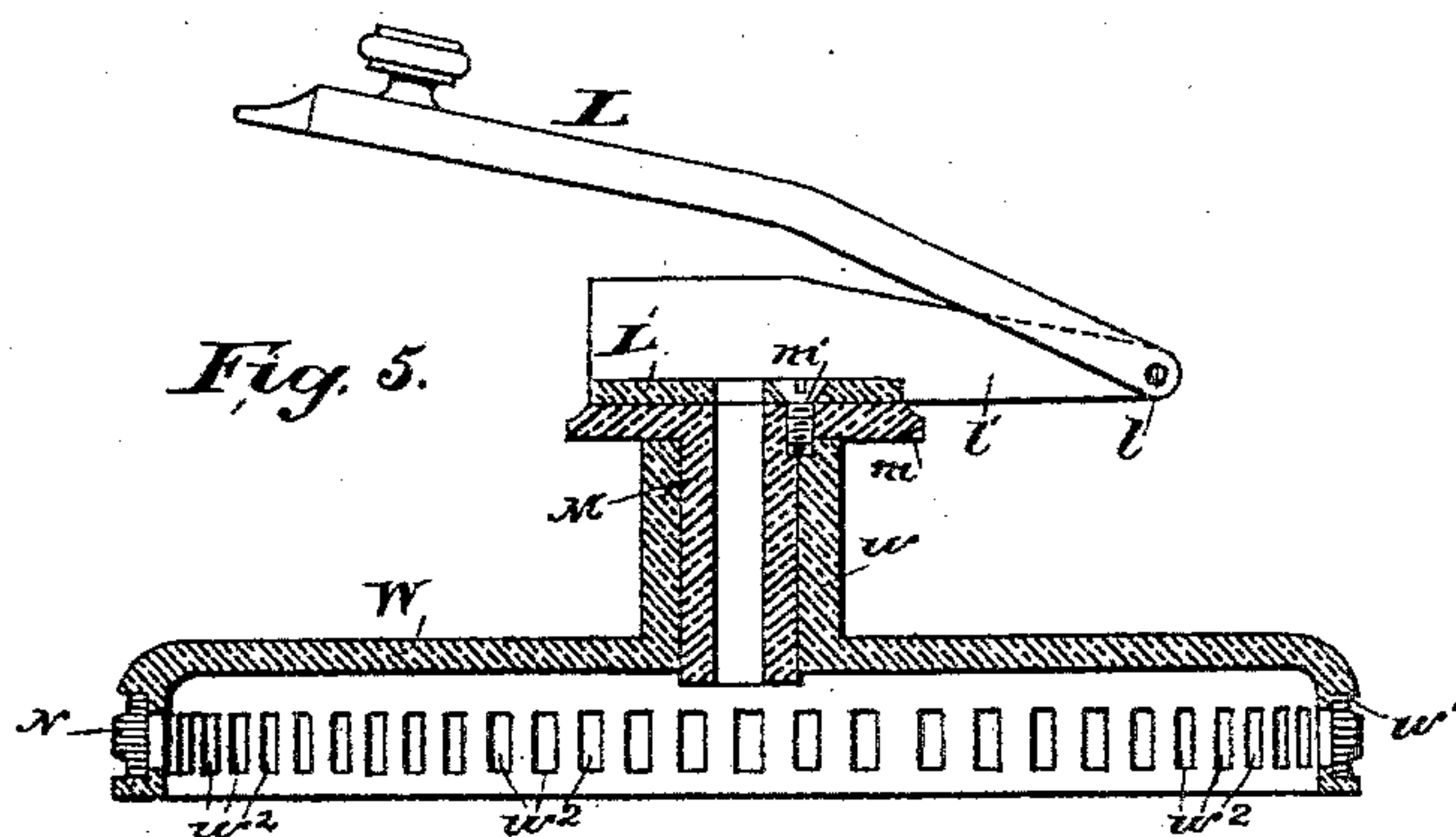
(No Model.)

4 Sheets—Sheet 4.

T. E. ENJALBERT.  
TYPE WRITING MACHINE.

No. 369,401.

Patented Sept. 6, 1887.



*Attest:*  
*W. E. Boulter*  
*Wm R. Davis*

*Inventor*  
*Theophile E. Enjalbert,*  
*per Henry Orth*  
*His atty.*



# UNITED STATES PATENT OFFICE.

THEOPHILE ERNEST ENJALBERT, OF PARIS, FRANCE.

## TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 369,401, dated September 6, 1887.

Application filed December 31, 1886. Serial No. 223,113. (No model.) Patented in France June 9, 1885, No. 169,438; in Belgium December 11, 1885, No. 71,188; in England December 15, 1885, No. 15,417, and in Germany December 19, 1885, No. 36,145.

*To all whom it may concern:*

Be it known that I, THEOPHILE ERNEST ENJALBERT, a citizen of the French Republic, residing at Paris, France, have invented certain new and useful Improvements in Type-Writing Machines, (for which I have obtained a patent in France, dated June 9, 1885, No. 169,438; in Belgium, December 11, 1885, No. 71,188; in Germany, December 19, 1885, No. 36,145, and in England December 15, 1885, No. 15,417,) of which the following is a specification.

Referring to the drawings, Figure 1 is a top plan view of my improved type writer. Figs. 2 and 3 are sections thereof, taken, respectively, on lines *xx* and *yy* of Fig. 1. Fig. 4 is a top plan view of the type carrier or wheel, showing the arrangement of the inking-rolls; and Fig. 5 is a vertical axial section thereof and its connection with the manipulating lever. Fig. 6 is a front view of the lever for holding the paper-carriage against lateral movement, showing the pivoted tooth or dog in the position it assumes when engaging the teeth of the rack-bar on the paper-carriage. Fig. 7 is a like view showing the pivoted dog in the position it assumes when disengaged from the teeth of the rack-bar and the rigid tooth on the lever is engaged with said rack-bar. Fig. 8 is an elevation of the lever and its teeth, taken from the side opposite to that shown in Fig. 2, said Figs. 6, 7, and 8 being drawn on an enlarged scale.

This invention relates to type-writers, and has for its object to provide an instrument of this class simple in construction, easy of manipulation, and capable of doing all the work now done on the complicated machines of this class now in use.

The invention has for its further object to provide means whereby the letters and characters may be readily changed from one style to another, or from those used in one language to those used in another; and it consists in the general construction and combination of the mechanism by which the desired results are obtained, and in certain details of construction and combination of parts, substantially as hereinafter fully described, and as set forth in the claims.

In the drawings, A indicates the inclosing-casing, the bottom  $A^3$  of which is detachably secured to the vertical walls by means of screws  $a^3$ . In the top  $A^2$  of the box is a longitudinal slot,  $a^2$ , that extends practically the full length of said box from right to left along the rear wall,  $a$ , which is preferably higher than the front wall,  $a^1$ , so as to cause the top to incline like that of an ordinary desk.

Although the top may be perfectly flat, I prefer to give it a certain inclination in order to afford a better view of the devices thereon, and also to facilitate the operation of writing. In the top is formed an opening equidistant from the end walls of the machine, which opening extends from the front wall,  $a^1$ , into the slot  $a^2$ , said opening being normally closed by a lid,  $A'$ , hinged to the front wall at  $a'$ .

The top  $A^2$  and the movable portion or lid  $A'$  thereof are provided along the front edge of the slot  $a^2$  with graduations  $a^5$ , each of which indicates a letter-space, the said graduations extending from left to right the required distance. To the bottom  $A^3$ , immediately below the slot  $a^2$ , are secured two rails, B B, the inner faces of which have a V-shaped recess and form a guide-track for the correspondingly-shaped carrier-wheels  $c'$  of a carriage, C. In practice I mount the opposite wheels of the carriage on spring-bearings (not shown) to better maintain their position on the track and compensate for any wear of the parts, as well as to obtain a yielding frictional contact between the wheels and rails.

The carriage C is composed of a truck or platform,  $C'$ , on which the wheels  $c'$  are mounted, and of two end walls,  $C^2$ , in which is mounted a rubber roll, D, which constitutes the impression-cylinder or platen. Upon the right end of the shaft  $d$  of the roll D is secured a ratchet-wheel,  $D'$ , (shown in dotted lines in Fig. 2 and in full lines in Fig. 3,) the space between two of the teeth of which wheel is equal to the space between two lines to be written.

The spacing-ratchet is operated by a pawl,  $E'$ , connected with a lever, E, Figs. 2 and 3, that projects through the slot  $a^2$  in the top of casing A and terminates in a thumb-piece,  $e$ , by means of which the lever is manipulated



to operate the pawl, and by means of which the carriage is moved back into position for commencing a new line.

The ratchet-wheel has a series of holes,  $d'$ , one for each tooth, with which engages a stop-pin,  $d^2$ , on the end of a spring-lever,  $D^2$ . The paper upon which the writing is done is inserted between the roll D and a guide, F, of sheet metal, that has a longitudinal slot,  $f$ , facing the type-wheel and line of type thereon, the guide being suitably supported between the end walls of the carriage.

It is obvious that when the roll D is rotated a distance equal to that between two of its teeth the paper will be moved with it a corresponding distance, the spring-lever yielding to the power applied to the spacing-wheel  $D'$ , disengaging the same and springing back into the next hole,  $d'$ , as it moves in line therewith. The carriage is actuated by means of a coiled spring, G, one end of which is secured to said carriage and the other to the left end wall of the casing, as shown in Fig. 3.

To the hinged portion  $A'$  of the top  $A^2$  of the inclosing-casing is secured a disk, K, which is fitted over an opening,  $a^6$ , formed in said hinged portion  $A'$ . The disk has an annular flange,  $K'$ , of such diameter as to leave a space,  $k$ , between it and the periphery of said disk, in which space are marked the letters, numbers, and other characters the machine is adapted to print, the flange  $K'$  being provided with a series of vertical slots,  $k'$ , corresponding with the series of letters, &c., on the annular space  $k$ . The disk K has a hub,  $K^2$ , in which fits a corresponding hub,  $w$ , projecting from a type carrier or wheel, W, which is rigidly connected with a lever, L, for positioning the wheel by means of a flanged sleeve, M, the flange  $m$  of which rests loosely on the disk K, and by means of keys or set-screws  $m'$ , as shown in Fig. 2, the lever L is pivoted at  $l$  between the arms  $l'$   $l''$ , that project from a base-plate,  $L'$ , and said base-plate is secured to the flange  $m$  of the sleeve M by the screws  $m'$ , which also lock the hub  $w$  to said sleeve.

It is obvious that when the lever L is lifted out of the slots  $k'$  in flange  $K'$  and turned around to rotate the sleeve M the type carrier or wheel will be correspondingly rotated, and if the type on the carrier are properly arranged relatively to the characters on the disk K it is obvious that said carrier may be positioned to bring any desired character opposite the slot  $f$  in the guide and guard F by moving the lever L to the corresponding character on the disk K. By depressing the lever into a slot,  $k'$ , in flange  $K'$  the type-wheel W is locked into position. The type-wheel has a peripheral recess,  $w'$ , in which is sprung an endless type-band, N, of rubber, on which the characters are formed in relief, and said wheel has a vertical slot,  $w^2$ , in its periphery in rear of each character.

O is a push bar or bolt that is fitted loosely in the sleeve M, and projects through the plate

$L'$  of the support of the lever L, which latter rests upon said bolt. The bolt projects through the type-wheel W and bears upon the arm  $P'$  of an angle-lever, P, controlled by a spring, S, in such a manner as to lift the bolt and lever L when relieved of pressure. It will be seen that by this arrangement whenever the lever L is depressed into one of the slots  $k'$  and again released the spring S, acting upon the lever-arm  $P'$ , will lift the bolt O, and through the latter the lever L, out of the slot again, this being the normal position of the parts described.

To the arm  $P^2$  of lever P is pivoted one end of a presser-bar or follower, Q, that acts to press the band forward and print a character on the paper on roll D. The forward or free end of the bar Q, entering one of the slots  $w^2$  in the periphery of the type-carrier W, behind one of the characters on the type-band N, pushes said character out through the slot  $f$  of the guard or guide F onto the sheet of paper whenever the lever P is depressed by the lever L.

The forward end of the bar Q is supported from and guided in the upper forked or slotted end of the standard I.

The step-by-step movement of the paper-carriage during the operation of writing is effected in the following manner:

H' indicates a lever pivoted at  $h^2$  upon the standard I, the rear arm of which lever projects into the path of a pawl or catch,  $p'$ , hinged to the outer end of the arm  $P'$  of lever P in such a manner as to yield or swing upward against the stress of a spring,  $p$ , to clear the rear end of lever H' without operating the same when the arm  $P'$  of lever P is swung downward to actuate the bar Q, but to engage the rear end of lever H' to swing the latter on its pivot when said arm  $P'$  is moving upward. The lever H' at its forward end is provided with a rigid tooth or dog, 2, and a tooth or dog, 1, pivoted below tooth 2. When not engaged with the teeth of the rack-bar on the paper-carriage, the tooth 1 stands in advance of tooth 2—that is to say, it will stand in a different vertical plane from that of tooth 2, as shown in Fig. 7—a spring,  $h^3$ , secured at one end to the lever H' and bearing at its other end upon the rear portion of tooth 1, causing the latter to assume said position. When, however, the tooth 1 is engaged with the teeth of the rack-bar, it will, under the stress of spring C, acting upon the paper-carriage, be moved directly beneath the tooth 2, as shown in Fig. 6, a stop-pin lying in the path of tooth 1, or a squared shoulder formed on the rear thereof, holding the same against any farther horizontal movement upon its pivot in that direction, thereby holding the paper-carriage stationary. When the machine is at rest, or during the time a character is being printed, the tooth 1 lies between two teeth of the rack-bar  $C^3$  on the paper-carriage, holding the latter stationary, the tooth 2 at the same time lying directly above tooth 1. When a character has been printed, the lever P, under the stress of its



spring S, will rise, the nose  $p^2$  of arm P' engaging the rear end of lever H', and tilting the latter upon its pivot. As the forward end of lever H' is depressed, it will tend to carry  
 5 tooth 1 from between the teeth of the rack-bar; but before said tooth clears the same the tooth 2 will enter the same interval occupied by tooth 1, and as soon as tooth 1 clears the rack-bar it will, by reason of the spring  $h^5$  pressing  
 10 upon its rear end, be sprung out into a position immediately below the next interval on the rack-bar, as shown in Fig. 7. The arm  $p'$  on lever P' will now clear the rear end of lever H', and the latter, under the action of  
 15 spring  $h'$ , will be tilted, the forward end of said lever rising, which will cause the tooth 1 to enter that interval on the rack-bar beneath which it stands, and causing the tooth 2 to pass upward clear of the teeth of the rack-bar, and  
 20 as soon as said tooth 2 clears the rack-bar the carriage will, under the stress of spring C, be moved a letter-space to the left—that is to say, until the tooth 1, which now lies between two rack-bar teeth, moves into position beneath  
 25 tooth 2—where, by reason of the stop-pin employed or the shoulder formed thereon, it will be arrested in its movement, and the carriage will therefore be held against farther movement until after the next depression of lever  
 30 L, when the described operation will be repeated, the carriage being thus fed forward step by step after each depression of said lever L. When it is desired to return the carriage to the position for printing a new line, this can  
 35 be done by means of the lever E, the tooth 1 of lever H', which is in engagement with the rack-bar on said carriage, yielding laterally to permit the latter to be moved back, after which said tooth will be again forced into engage-  
 40 ment with the rack-bar teeth by means of the spring  $h^5$ , which then bears upon the forward end of the tooth.

At the left hand of the inclosing-case and secured to the top  $A^2$  thereof is arranged a  
 45 bell, R, the arm of whose hammer R' projects into the path of a lug,  $c^3$ , Fig. 3, on the left of carriage C, above which lug is arranged a pointer,  $c^4$ , that travels with the carriage along the graduations  $a^5$ . By means of this pointer  
 50 the positioning of the carriage C relatively to the point at which the printing is commenced for each line may be indicated on the graduations  $a^5$ , and said pointer will also indicate when a line is completed, irrespective of the  
 55 bell R, if proper note is taken. In practice I employ, besides the usual pointer and bell, movable stops  $t$ , to limit the traversing motion of the carriage in either direction, said stops being adjusted along the graduations  
 60 and projecting into the path of the pointer  $c^4$ . T T, Fig. 4, are inking-rolls suspended from the hinged portion A' of the top  $A^2$  of the case A on opposite sides of the type-wheel W, and in proximity to the point where the  
 65 impressions are made on the paper.

It will be observed that on the disk K there

is a space devoid of characters, the type-band having a corresponding empty space. When the lever L and the type-wheel W are rotated to bring this space in proper position, said  
 70 lever may be depressed any desired number of times without making an impression, so that any desired space may be obtained between two words.

From the description of the construction, 75 arrangement, and operation of the several parts that constitute my improved type-writer its operation will be readily understood by all those conversant with this class of machines, and this operation need therefore not be fur- 80 ther described. The inclosing of the operating mechanism within a casing preserves the same from dust and dirt, and therefore does not require the attention necessary in that class of type-writers in which the entire op- 85 erating mechanism is exposed.

The object in hinging that portion A' of the top  $A^2$  of the inclosing-case A is to provide means whereby easy access may be had to the carriage and the mechanism contained in the 90 case, as it is obvious that by swinging the portion A' open the type-wheel W and push-pin O are swung out of the casing, leaving the remaining mechanism exposed.

By connecting the bottom  $A^3$  of the inclos- 95 ing-case A detachably to the vertical walls thereof said bottom, to which a portion of the operating devices are secured and on which the carriage travels, may be readily taken out and access had to any part of the machine. 100

I have described above the use of an elastic type-band. It is obvious that by means of this arrangement the style of letters may be readily changed by substituting one type- 105 band for another and writings obtained in any desired language by simply swinging out the type-wheel W, removing the type-band N thereon, and substituting another having the characters, &c., of the language in which the printing is to be effected. 110

The construction of many of the operative devices may be varied without departing from the nature of the invention. For instance, the lever L may be provided with a downwardly- 115 projecting pin adapted to engage holes in the disk K. The push pin or bar O may, if desired, be pivoted to said lever and to the lever P. A spring stop may be employed and arranged to engage the teeth of the spacing-ratchet D', instead of a pin entering a hole in 120 said ratchet. The carriage may be mounted so as to slide on the rails by a tongue-and-groove joint. Instead of an impression-cylinder, D, performing the function of a platen, a platen may be employed in conjunction therewith of 125 suitable rolls for moving the paper thereon to space the lines, the sleeve M may be dispensed with, and the plate or disk L' of lever L secured directly to the hub  $w$  of the type-carrier W by means of a key, or said plate may be 130 provided with a screw-threaded socket to screw in or on the hub of the type-wheel.



Finally, other modifications will readily suggest themselves to the skilled mechanic, and need not therefore be further alluded to.

Having now described my said invention, what I claim is—

1. In a type-writer, the combination, with the type-carrier, a paper roll and carriage, a character-index, a lever arranged to travel over said index, and intermediate mechanism, substantially as described, between said lever, the type, and the paper-carriage, whereby a type is projected and the paper-carriage advanced at each depression of the lever, of an inclosing-casing having a hinged top from which the type-carrier, character-index, and lever are supported, as and for the purpose specified.

2. In a type-writer, the combination, with the type-carrier, a paper roll and carriage, a character-index, a lever arranged to travel over said index, and suitable intermediate mechanism between said lever, the type, and the paper-carriage, whereby a type is projected and the paper-carriage advanced at each depression of the lever, of an inclosing-casing having a detachable bottom upon which said intermediate mechanism, the paper-carriage, and the roll are supported, as and for the purpose specified.

3. In a type-writer, the combination, with the type-carrier, a paper carriage and roll, a character-index, a lever arranged to travel over said index, and suitable intermediate mechanism between said lever, the type, and the paper-carriage, whereby a type is projected and the paper-carriage advanced at each depression of said lever, of an inclosing-casing having a hinged top supporting said type-carrier, character-index, and lever, and a detachable bottom supporting said intermediate mechanism, paper-carriage, and roll, as and for the purpose specified.

4. In a type-writer, the combination, with the carriage that supports the impression-cylinder and the printing and inking devices, of an inclosing-casing provided with a slot on the line of motion of the carriage, a lug projecting from the carriage through said slot, and a stop adjustable in the path of the lug to limit the traversing motion of the carriage, substantially as and for the purpose specified.

5. In a type-carrier, printing devices consisting of a cylindrical type-carrier having slots formed in its periphery, an endless elastic type-band having the characters in relief thereon secured to the carrier so that each of its characters will lie over one of the peripheral slots of said carrier, and a plunger operating upon the type-band through the slots to press the characters out, in combination with a platen, as and for the purpose specified.

6. In a type-writer, the combination, substantially as described, with a platen having a rectilinear movement and a stop to hold the same against motion, of a revoluble type-carrier and endless elastic type-band having the

characters in relief thereon secured to the periphery of the carrier, a plunger operating in the type-band to expand the same and move a given character onto the platen, a lever for positioning the type-carrier, said lever operating to control the operation of the plunger and through the stop the movement of the platen.

7. In a type-writer, the combination, with the operative mechanism, of an inclosing-casing having a detachable bottom and a pivotal top portion, from which bottom and top portions the entire mechanism is supported, substantially as and for the purpose specified.

8. The combination, with the inclosing-casing A, the spring-actuated carriage C, and the pawl-lever H H', of the index disk or dial K, provided with the slotted annular flange K', a cylindrical type-carrier suspended from and revoluble in a bearing in said disk, a manipulating-lever rigidly connected with the carrier and arranged to rotate around the disk, and intermediate devices, whereby the pawl-lever H H' is controlled by the manipulating-lever when depressed and released to control the movement of the carriage, substantially as described.

9. The combination, with the inclosing-casing A, the spring-actuated carriage C, and the pawl-lever H H', of the index disk or dial K, provided with the slotted annular flange K', a cylindrical type-carrier suspended from and revoluble in a bearing in said disk, a manipulating-lever rigidly connected with the carrier and arranged to rotate around the disk, a push-bar operated by the manipulating-lever, and a spring-actuated pawl-lever operated by the push-bar and operating the pawl-lever H H', substantially as and for the purpose specified.

10. The combination, with the inclosing-casing A, the spring-actuated carriage C, and the pawl-lever H H', of the index disk or dial K, provided with the slotted annular flange K', a cylindrical type-carrier suspended from and revoluble in a bearing in said disk, a manipulating-lever rigidly connected with the carrier and arranged to rotate around the disk, a push-bar operated by the manipulating-lever, a spring-actuated lever operated by the push-bar, and a plunger controlled by the latter lever and operating on the type of the carrier to produce the impression at each depression of the manipulating-lever, substantially as and for the purpose specified.

11. The combination, substantially as described, of the disk K, having slotted flange K' and tubular bearing K<sup>2</sup>, the traversing carriage C, the rack-bar C<sup>3</sup> thereof, the impression-cylinder D, mounted on said carriage, and the pawl-lever H H', operating on the rack-bar, with the type-carrier W, revoluble in bearing K<sup>2</sup> and having peripheral slots w<sup>2</sup>, the elastic type-band N, secured to the carrier, the lever L and flanged sleeve M, by means of which said lever is secured to the carrier, the push-bar O, angle-lever P, and plunger Q, said



parts being arranged for operation for the purpose specified.

12. The combination, with the inclosing-casing having a slot,  $a^2$ , and an index along one edge thereof, of the spring-actuated carriage provided with a pointer adapted to play along said index, and a lever for moving said carriage in one direction projecting through the slot in the casing, as described.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of November, 1886.

THEOPHILE ERNEST ENJALBERT.

Witnesses:

ROBT. M. HOOPER,  
JOSEPH PETKOWSKI.