

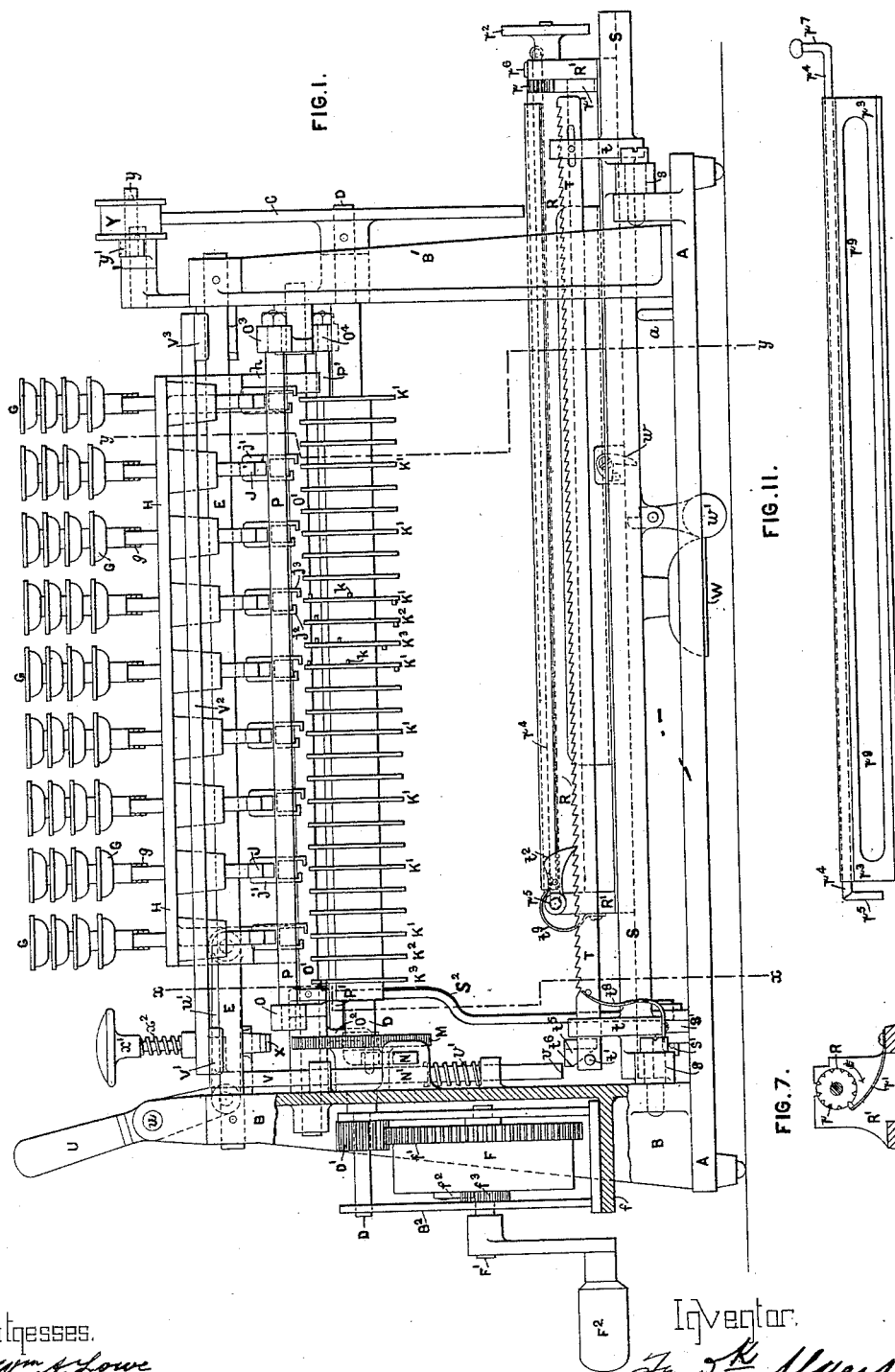
(No Model.)

3 Sheets—Sheet 1.

F. MYERS.
TYPE WRITING MACHINE.

No. 419,209.

Patented Jan. 14, 1890.



Witnesses.

Wm. A. Lowe
Chas. Morgan

Inventor.

Fred K. Myers
By A. O. Harrington

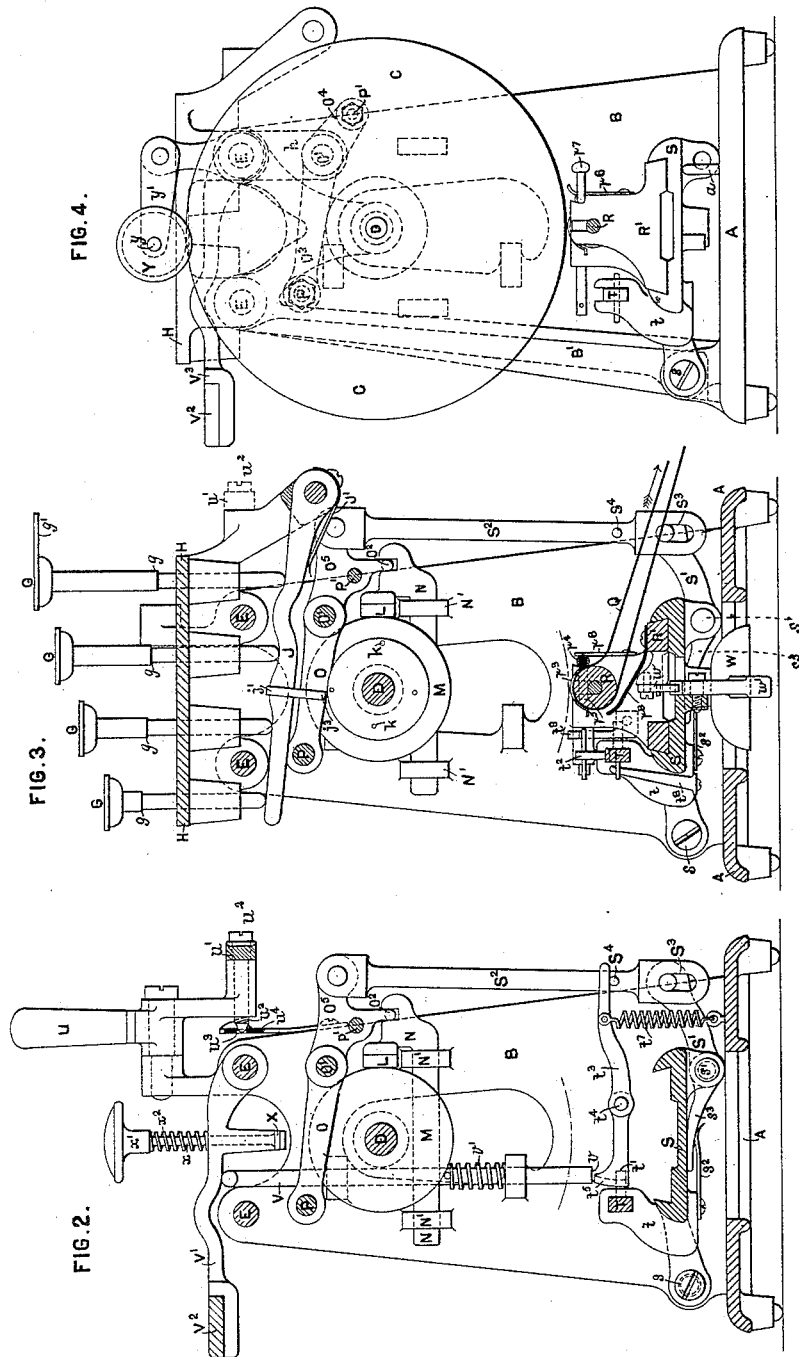
(No Model.)

3 Sheets—Sheet 2.

F. MYERS.
TYPE WRITING MACHINE.

No. 419,209.

Patented Jan. 14, 1890.



Witnesses
Wm. A. Lowe
W. J. Morgan

Inventor
Fred K. Myers
By *A. P. Thayer* atty.

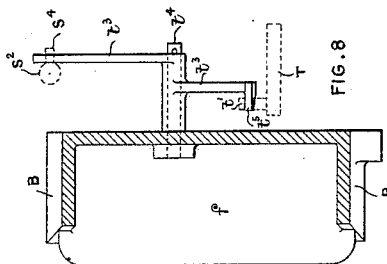
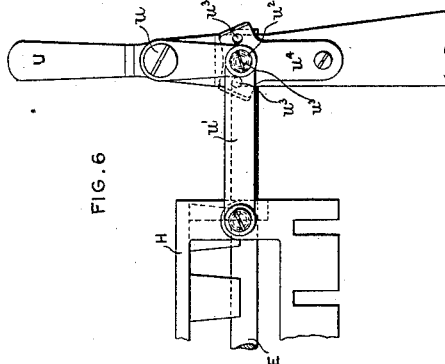
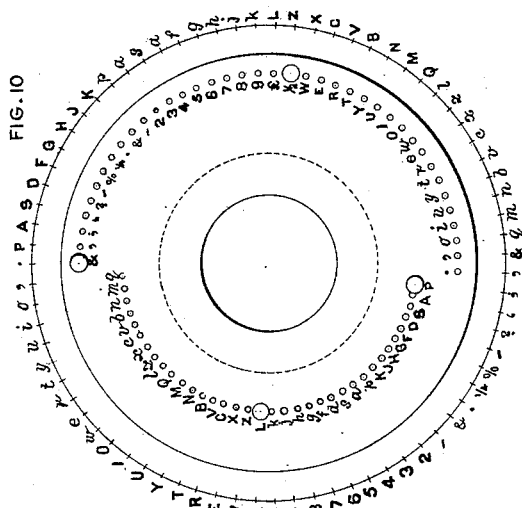
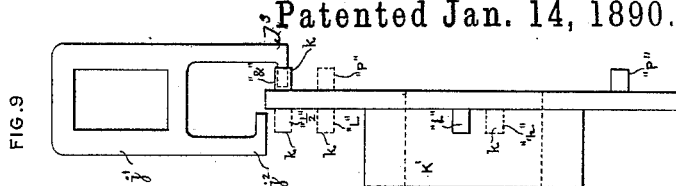
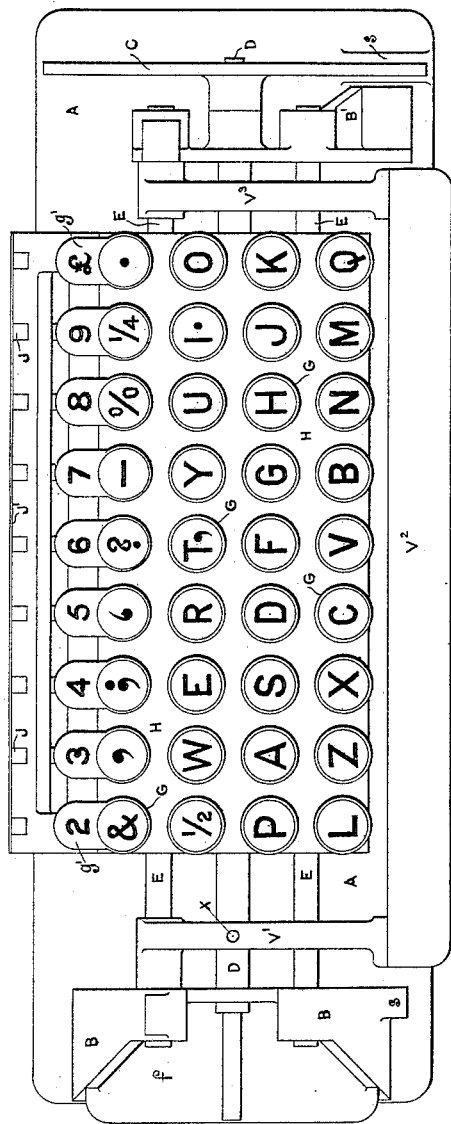
(No Model.)

3 Sheets—Sheet 3.

F. MYERS
TYPE WRITING MACHINE.

No. 419,209.

Patented Jan. 14, 1890.



Witnesses.

Wm. A. Howe
W. J. Morgan

Investor.

Frank Myers
By A. P. Thayer atty.

UNITED STATES PATENT OFFICE.

FREDERICK MYERS, OF LIVERPOOL, COUNTY OF LANCASTER, ASSIGNOR TO
THE MERCURY TYPE WRITING MACHINE COMPANY, (LIMITED,) OF LON-
DON, ENGLAND.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 419,209, dated January 14, 1890.

Application filed February 6, 1888. Serial No. 263,189. (No model.) Patented in England October 18, 1887, No. 14,130; in Germany No. 43,831; in France April 17, 1888, No. 190,032; in Belgium No. 81,648, and in Austria-Hungary No. 42,176 and No. 6,427.

To all whom it may concern:

Be it known that I, FREDERICK MYERS, a citizen of the United States, residing at Liverpool, in the county of Lancaster, England, have invented certain new and useful Improvements in Type-Writing Machines, (which invention has been patented to me in England, No. 14,130, October 18, 1887; Germany, No. 43,831; France, No. 190,032, April 17, 1888; Belgium, No. 81,648, and in Austria-Hungary, Nos. 42,176 and 6,427, and for which I have obtained provisional protection in England, No. 12,803, dated September 21, 1887,) of which the following is a specification.

The invention relates to a type-writer having the finger-keys arranged in parallel rows and designed so as to produce a strong, simple, and reliable machine at less cost than some that are at present in the market.

In the drawings, Figure 1 is a front elevation of my improved type-writing machine, with part of one of the upright frames in section. Fig. 2 is a cross-section on line *xx*, Fig. 1, with the paper-carrying roller and its frame removed; Fig. 3, a cross-section on line *yy*, Fig. 1, showing the paper-carrying-roller frame and its attachments, and also a device for clipping the paper to the roller, parts of the mechanism being removed for the sake of clearness. Fig. 4 is an end elevation with parts removed; Fig. 5, a plan of the machine; Fig. 6, a back elevation of a small portion of the key-frame, with its handle and connecting-rod for moving it longitudinally and a device for locking it in the required position. Fig. 7 is a device for spacing the lines. Fig. 8 is a plan of a portion of the machine, showing more especially the device for spacing the words and letters; Fig. 9, side elevation (enlarged) of a disk with pins and stopping device for engaging the said pins or projections to adjust the type-wheel for printing; Fig. 10, an end elevation of Fig. 9, used also as a diagram to show the arrangements of pins in the whole series of disks and the relative positions of the corresponding type on the type-wheel; Fig. 11, a detail of paper-gripping device.

A is the frame-work or base of the appa-

ratus, on which are mounted the upright frame 50 B and the standard B'.

C is a wheel or disk, on the periphery of which are arranged the letters, numbers, stops, symbols, &c., which are required.

The type-wheel C is mounted on a spindle 55 or shaft D, which is journaled at one end to the standard B' and at the other to the spring-barrel frame B². The shaft D is preferably driven by a spring, though other sources of motive power may be employed—such as a 60 small dynamo-machine, a descending weight, &c., or even a band driven from a continuously-rotating shaft might be used in conjunction with a suitable friction-clutch.

F is a spring-barrel containing, preferably, 65 a coil or clock spring wound on a spindle or drum F' and supported between the cheeks of the frame B² on the shelf *f* of the upright B. The teeth *f'* of this spring-barrel engage a pinion D' on the spindle D. F² is a handle for 70 winding the spring from time to time as soon as it has spent its force. The spring is prevented from uncoiling when it has been wound (except when released, as will be hereinafter described) by means of the pawl *f*², 75 which engages the ratchet-teeth *f*³ on one of the cheeks B², being a similar arrangement to that used for clocks.

The keys G are arranged in parallel rows in the frame H, transversely of it. The same 80 keys which are used for printing the large characters may also be used for printing the small characters and the figures in the manner hereinafter described. The frame H is mounted on guide-rods E, so as to slide longi- 85 tudinally, the said rods being secured to the frame B and standard B', or in other convenient manner. Below each transverse row of keys is provided a lever or rod J, which is pivoted to sliding frame H, and upon which 90 the keys G or their spindles rest. This key-lever can be depressed by any one of the keys G in the row which rests upon it. It is held in position by means of a spring J', and, 95 if desired, the keys themselves may be provided with springs. I prefer, however, to provide the levers only with springs, so that all the keys in one row will descend when one

key is depressed and thus leave ample space for the hand or fingers of the operator. All the keys are provided with shoulders or stops *g*, so placed that no two keys in a row will descend the same distance. For example, the front key may be made to descend a little farther than the second, the second key a little farther than the third, and so on. Disks *K'* are mounted on the spindle *D* and firmly secured thereto, and between each of the said disks *K'*, I mount two other disks *K²* *K³*, also firmly secured to the spindle.

The spindle *D*, with its type-wheel *C*, is prevented from revolving under the action of the spring in barrel *F* by the application of a block or cushion *L*, which engages a wheel *M*, also attached to the spindle *D*. In practice this wheel will be preferably made with a toothed or jagged face. This block is held in engagement with the wheel *M* by a spring hereinafter referred to, or by the weight of the paper-carrying devices and their attachments, and is withdrawn from engagement therewith when any one of the keys *G* is depressed. For this purpose the block *L* is mounted on a sliding bracket *N*, supported in guides *N'*.

O is a lever pivoted on the rod *O'*, which is supported at one end in a journal on frame *B*, and at the other in the lug *h* on the frame *H*. The said lever is provided at one end with two arms, one of which *O²* engages the sliding bracket *N*, the object of the other one being described hereinafter. The other end of the lever is provided with a rod or bar *P*, placed below the pivoted levers *J* and parallel to the ends thereof, being made of such a length that any one of the said key-levers will strike it when depressed, and thereby withdraw the block *L* from the brake-wheel *M*. The other end of the bar *P* is attached to a lever *O³*, also pivoted on the rod *O'* and having a rearward extension *O⁴*. Between *O⁴* and the arm *O²* a stay *P'* is rigidly fixed, so that *P*, *O*, *O²*, *P'*, *O⁴*, and *O³* move together as one frame about their pivot *O'*.

R is the paper-carrying roller, supported in any convenient manner on the frame *R'*, which slides in a hinged guide or bed *S*. The end of the roller *R* is provided with a wheel having a number of notches *r*, Fig. 7, into which a spring pin or pawl *r'* engages itself, holding the roller in any desired position. The distance between each of the notches *r* is equal to the distance required between the lines of writing or printing. On the completion of a line the hand wheel or disk *r²*, Fig. 1, is turned in the direction of the arrow, Fig. 7. The pawl *r'* is therefore depressed and the paper-roll can be moved the required distance. The bed *S* is hinged or pivoted at *s* to bed *A* of the machine and to the frame *B*, or in other convenient manner, so that the paper-carrying roller *R*, with its sliding frame and attachments, can be raised on its pivots *s* against the type-wheel *C*. That end of the bed *S* farthest

from the type-wheel *C* and below the lever *O* is provided with an arm *S'*, which is connected by means of the rod *S²* to the arm *O⁵* of the lever *O*. The connecting-rod *S²* has at its lower end a longitudinal slot *S³*, through which the connecting-pin of the arm *S'* passes and along which it is able to move. The top of this slot rests normally on the said pin and is of such a length that its lower end only engages the pin and raises the paper-carrying roller after a great portion of the upward movement of the rod *S²* and downward movement of a key have been accomplished. The bed *S*, when at rest, is supported, as shown, on a pin *a*, affixed to the machine in *A*. When any one of the keys is depressed to the full extent of its travel, the paper-carrying roller *R* will therefore be raised against the type-wheel *C*. The keys *G* being depressed through varying distances in consequence of the positions of the shoulders *g*, it follows that the connecting-rod *S²* will have a different amount of upward movement for each longitudinal row of keys. The upward travel of the paper-carrying roller *R* is, however, constant and must be accomplished by the shortest upward movement of the connecting-rod *S²*—that is, of the arm *S'*. To allow the said arm to move independently of the bed *S* during the greater movements of the rod *S²*, it is spring-pivoted to *S*, as shown at *s'*, Fig. 2, its spring *s²* keeping the extension or tail *s³* normally against the bottom of the bed *S*. The spring *s²* is strong enough to keep the arm *S'* in normal position while the type on wheel *C* prints the paper on roller *R*; but any pressure on wheel *C* in excess of what is necessary to print overcomes the resistance of the spring and prevents the type or paper from being injured. The raising of the connecting-rod *S²* causes the roller-frame *R'* to be moved longitudinally the necessary distance for spacing the letters. This may be effected by means of a toothed rack *T*, supported in brackets *t*, attached to the hinged bed *S* and having at its end a pin *t'*. The sliding frame *R'* has pivoted to it a pawl *t²*, which engages the teeth of the toothed rack *T* in one direction only. As the connecting-rod *S²* is raised by the depression of a key, the pin *S⁴* attached thereto raises the rear end of the rocking-lever *t³*, which rests upon it. The said lever (shown in plan in Fig. 8) is pivoted at *t⁴* to the frame *B* or other suitable point and carries at its front end an inclined finger or projection *t⁵*, which, when depressed, engages the pin *t'* and causes the rack *T* (and with it the sliding frame *R'* by means of the pawl *t²*) to be drawn forward the space required for printing one letter. By this time the lower end of the slot *S³* has engaged the pin of arm *S'*, and the further movement of the rod *S²* raises the said arm, and consequently the paper-carrying roller, a sufficient distance to press the paper thereon against the type-wheel *C*, the pin *t'* meanwhile resting against the vertical portion *t⁶* of the finger *t⁵*. On the

key being released the lever t^3 is brought back to its original position (and with it the connecting-rod S^3) by means of the spring t^7 . The rack T is now returned by the spring t^8 , the pawl t^2 riding over the teeth of the said rack. When required the pawl t^2 may be put out of gear and so held by the spring t^9 . The spring t^7 also serves to hold the block L against the wheel M. If desired, the pawl t^2 may engage the rack in the reverse direction.

For the purpose of spacing the words I provide an additional key V, having a foot v , which, when the key is depressed, causes the sloping finger t^5 to engage the pin t' on the end of the toothed rack T, and thus moves the paper-carrying roller forward the necessary distance. When pressure is removed from this key, it flies up under the action of spring v' . The rack T being thus released, it moves back, as before, under the action of spring t^8 , the pawl t^2 riding over the teeth of the rack. The spacing-key V is depressed by the pivoted lever V^1 , having a pedal or finger bar V^2 , which is supported at its other end on a similar pivoted lever V^3 . By means of the finger-bar V^2 the spring-key V may be worked conveniently by either hand.

The sheet of paper Q is held in position on the roller by means of a clip or holder r^3 , Figs. 3 and 11. The clip r^3 is attached to a rod r^4 , which passes the whole length of the roller-frame R' and is hinged thereto at r^5 , Figs. 1 and 3, being held in position by the spring r^6 . The roller-frame R' being withdrawn clear of the type-wheel, the rod r^4 , carrying the paper-clip, is thrown back by means of the handle r^7 , Fig. 4. The edge of the sheet of paper is slipped under the roller, being guided thereto by the guide r^8 , then passed over it and the clip brought down again. The clip r^3 has an opening r^9 , Fig. 4, a portion of the surface of the paper being thus left exposed, so as to receive an impression from the type-wheel. The paper is moved in the direction of the arrow, Fig. 3.

Each key-lever J is provided with a stopping device or plate j' , secured thereto, having projections j^2, j^3 , Fig. 9, at its end for engaging pins or projections k on the disks K^1, K^2, K^3 , attached to spindle D.

The handle U, Figs. 1, 2, and 6, is pivoted at u , and is connected with the key-frame H by means of a connecting-rod u' . The key-frame can be moved longitudinally on the guide-rods E by means of the handle U, so that the projections j^2, j^3 on the stop j' will engage the pins k on the disks K^3 when the handle is in the position shown in Fig. 6. When it is moved toward the left or right, the stop-plate j' will engage, respectively, the pins of disks K^2 and K^1 . The frame is locked in the desired position by means of the pin u^2 , which engages depressions or holes u^3 in the spring-plate u^4 .

The keys bearing their respective letters, figures, symbols, &c., may be arranged as shown in Fig. 5; but of course many other ar-

rangements may be adapted. To print large characters, &c., the key-frame H is moved longitudinally, so that all the stop-plates j will engage the disks whose projections k correspond with the large characters on the type-wheel. Disks K' may be conveniently used for the large characters. The first key in the front row is, for example, depressed (which on Fig. 5 is marked with the letter L) until its shoulder g rests on the frame H. Its movement depresses the key-lever J, also the front end of the lever O, by means of bar P, thereby raising the arm O^5 and withdrawing the block L from the brake-wheel M, so that the type-wheel will rotate under the action of the spring in barrel F. One of the projections j^2 or j^3 of the stop-plate j' will, however, engage a pin (marked L, Figs. 9 and 10) on the disk K' corresponding to letter "L" on the type, and will therefore instantly stop the motion of the type-wheel C, the letter "L" on the said wheel being then in a position ready for making an impression on the surface of the paper exposed by the opening in clip r^3 . The lever O, besides releasing the brake-wheel, actuates, by means of the rod S^2 , the lever t^3 , causing the paper-roller to be moved longitudinally the space required to print one character, and afterward raising the said roller against the type-wheel, as before described. As soon as the key is released it flies upward under the action of spring J' , the brake is again applied to prevent the type-wheel rotating, and the paper-roller is lowered. If the second key in the same transverse row is now depressed, which on the drawing is marked "P," the brake is released as before; but the stop-plate j' descends a less distance than with the first key, and therefore does not engage pin L, Figs. 9 and 10, on the disk K' , but a pin P, Figs. 9 and 10, corresponding to "P" on the type-wheel. The remaining keys in the row stop the type-wheel in an exactly similar manner. As each key descends a greater or less distance, the stop-plate j' can engage only one pin on the disk, and it is evident that the remaining pins cannot be engaged by it, because the projection j^2 or j^3 on its end is not of sufficient width to engage more than one pin at a time. The remaining rows of keys are arranged in a similar way; but it will be evident that the pins on one disk K' are not placed in the same position relatively to those on the other disks, but either lead or follow the pins thereon. If there are, for example, as shown in the drawings, seventy-five characters on the type-wheel, and all the said characters are the same pitch or distance apart, then the pins on each of the disks K^1, K^2 , and K^3 will lead or follow the pins on one of the other disks (preferably the one nearest to it) by an angle subtended by one seventy-fifth part of its circumference, Figs. 9 and 10. L P $\frac{1}{2}$ &, Figs. 9 and 10, represent, for example, the pins on the first disk K' . Z A W represent the pins on the second disk K' ; X S E, the

pins on the third disk K', and so on. I prefer to place the pins on each side of the disks and on the lines of two circles of different radii, Figs. 9 and 10; but, if desired, the pins may be provided on one side only, or they may be arranged on the lines of more than two circles. When the pins *k* are arranged only on one side of the disk, one projection *j*² or *j*³ only is required.

To print figures the frame H is shifted on its guide-rods so that the stop-plates *j'* will engage the disks whose pins correspond with the figures on the type-wheel, preferably the disks K². There are generally only a limited number of figures and symbols required for general use, and therefore a limited number of pins will be required on these disks. The third and fourth keys in the first row are marked, for example, with " $\frac{1}{2}$ " and "&," and therefore its disk will be provided with two pins corresponding with the fraction " $\frac{1}{2}$ " and the character "&" on the type-wheel. These pins are represented on Fig. 10 by " $\frac{1}{2}$ " and "&." The second disk, in accordance with the arrangement of keys illustrated on Fig. 5, will be provided with one pin, (represented by "3" on Fig. 10,) the fifth disk with two pins, (represented on Fig. 10 by "1," "2," "6,") and so on. The first two keys in the first row (P and L) and the three first keys in the second row (W A Z) will not engage any projection on disks K² if they are depressed. The small plates *g'* on the rear key of each row are only provided for convenience, as there is generally not sufficient space for the representation of more than one character on a key.

To print small characters the frame H may be shifted so that the stop-plates *j'* engage the disks having pins in the same relative position as the small characters on the type-wheel, preferably the disks K³. The first disk K³ will therefore have pins represented on Fig. 10 by "1," "p," " $\frac{1}{2}$," and "&."

W is a warning-bell, preferably attached to the hinged bed S. The pivoted projecting pin or snug *w* actuates the hammer *w'* each time the frame approaches the end of its travel and thus indicates when the end of a line is nearly reached. The pawl *t*² can then be raised and the paper-roller drawn back to commence a fresh line of printing. The snug *w*, being pivoted, only actuates the hammer in one direction.

If it is desired to repeat the impression of a character two or more times in succession, it will be evident that each time the key is depressed it will, in the ordinary manner, cause the type-wheel to make one complete revolution for each impression. If letters are thus frequently repeated, the spring in box F would rather quickly spend its force. To obviate this I provide a block X, which is brought into engagement with the brake-wheel M independently of the block L, before described. The block X is faced with some yielding material, so that when depressed it will grip the wheel M and prevent

the type-wheel rotating. The block is mounted on a spindle *x*, which passes through the lever V' and is supported thereby. The upper end of *x* is fitted with a push-head *x'*, and between the said head and the lever V' a spring *x*² is inserted, so that the block X is held clear of the wheel M even when the lever V' is depressed; but it is free to move when required independently of said lever by pressing on head *x'* to hold the wheel M while repeating letters and economize the force of the driving-spring. The same character may thus be printed in succession as many times as required.

The ink is preferably carried on one or more small rollers Y, carried on spindles *y*, secured to a hinged or pivoted lever *y'*, which is preferably carried on the standard B'. When the machine is in use the type-wheel is constantly rotating, and the ink-roller Y is therefore brought into contact successively with each of the letters, &c. The weight of the roller keeps it on the face of the type-wheel; but if two or more inking-rollers are provided at the sides they may be held against the surface of the type by means of a spring.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, in a type-writing machine, of the type-wheel having the type arranged on its periphery, the power mechanism having a constant tendency to revolve said wheel, the key-levers and stops controlled by the key-levers, the stop-pins on the disks of the type-wheel shaft, the brake-wheel also on said shaft, the brake holding the type-wheel when released from the stops of the key-levers and adapted to be released by the key-levers when actuated for making the impressions, and the spring re-applying the brake to the type-wheel when released from the stops of the key-levers, substantially as described.

2. The combination, in a type-writer, of the power-driven type-wheel, the means employed for arresting the motion of the type-wheel when any required type corresponding to a depressed key is in position for printing—namely, the series of transverse rows of key-levers, the series of disks mounted on the type-wheel shaft, one disk to each transverse row of keys, one or more projecting pins or teeth on each disk, and the stop-plate, (common to every key in the row, but actuated independently by any of them,) the pins being in the same relative angular position to each other as the corresponding type on the type-wheel and their radial position being so arranged with reference to the travel of the keys and their stop-plate that the latter can only engage that particular pin which corresponds to the type represented by the depressed key, substantially as shown and described.

3. The combination, in a type-writing machine, of the type-wheel having the type arranged on its periphery, the power mechanism

ism having a constant tendency to revolve said wheel, key-levers and stops controlled by the keys, the stop-pins on the disks of the type-wheel shaft, and the transverse rows of two or more keys to each key-lever, substantially as described.

4. The combination, with the rotary type-wheel and its systems of stop-pins for registering the type with the printing-point, of keys, key-levers and stops thereof, and a separate individual circumferential system of stop-pins on the type-wheel axle for each key, substantially as described.

5. The combination, with the rotary type-wheel and its systems of stop-pins for registering the type with the printing-point, of a key-lever and stops, and a transverse row of two or more keys to each lever, with each circumferential system of stop-pins on the axle of the type-wheel, the said systems of pins comprising pins located in different radial distances for the different keys, and the respective keys having different distances of movement to operate the lever, substantially as described.

6. The combination, in a type-writer, of the type-wheel, type-wheel shaft, disks and stop-pins on said disks whereby the movements of the type-wheel are governed, the movable key-frame, such as H, and keys mounted thereon in transverse parallel rows, a pivoted lever, such as J, to each row of keys which rest on said lever and also mounted on said frame, a stop-plate, as j' , to each lever J, and a shoulder, such as g , to each key, so located with reference to the key-frame that each key in the said row when depressed causes the stop-plate to move into a different position and to engage its own particular pin, substantially as described.

7. In a type-writer, the combination of a sliding key-frame, such as H, carrying the pivoted levers J, with their stop-plates j' , and capable of being readily adjusted longitudinally in two or more given positions, with two or more series of disks, such as $K^1 K^2 K^3$, having projecting pins, such as k , whereby with one set of keys, levers, and stop-plates the machine is enabled to print two or more sets of characters, substantially as shown and described.

8. The combination, with the rotary type-wheel and the disks on its shaft having stop-pins on each side, of the key-levers having separate stops for the pins of the different sides of the disks and being gaged in different lengths for clearance on one side when in contact on the other side of the disk, substantially as described.

9. In a type-writer, the combination, with a type-wheel, such as c , (having a fixed axis,) and a hinged bed, such as S, and the paper-carrying supports on said bed, of the spring-pressed pivoted arm, such as S' , the variably-moving lever actuated by the key-levers, and the rod connecting said lever and arm and the key-levers, whereby the constant travel of the

bed is adjusted to the variable movements of the keys and excessive pressure of the type on the paper prevented, substantially as described and shown.

10. The combination, with the type-wheel and vibrating paper-roller bed, of the paper-roller carriage, the feed-rack reciprocating on the bed, the holding-pawl attached to the carriage, the feed or spacing lever and inclined finger thereof acting on the stud-pin of the feed-rack, the lever actuated by the key-levers for actuating the roller-bed and feed-lever, the key-levers, and the connecting-rod connected with said lever actuated by the key-levers, also with the feed-lever and with the arm of the vibrating paper-roller bed, substantially as described.

11. The combination, with the rotary type-wheel and the key-levers and keys, of the pivoted paper-roller bed, the lever actuated by the key-levers, connecting-rod, and the jointed and spring-controlled arm of the paper-roller bed connecting said lever and rod with said bed, substantially as described.

12. The combination, with the rotary type-wheel and the key-levers and keys having different lengths of travel, of the pivoted paper-roller bed, the lever actuated by the key-levers, connecting-rod, and the jointed and spring-controlled arm of the paper-roller bed connecting said lever and rod with said bed, substantially as described.

13. The combination, with the power-driven type-wheel and with the key-levers and the lever actuated by the key-levers, of the brake-wheel attached to the shaft of said type-wheel, the brake connected with the aforesaid lever actuated by the key-levers, and the spring holding the brake on the brake-wheel while the type-wheel is free of the key-levers, substantially as described.

14. The combination of the vibrating paper-roller bed, paper-roller slide, feed ratchet-bar, feed or spacing lever, the connecting-rod for working said bed and feed-lever and being respectively connected thereto for working the feed-lever in advance of the movement of the paper-roller bed, the lever actuated by the key-levers, and said key-levers, substantially as described.

15. The combination, with the type-wheel, the brake-wheel on the shaft of said type-wheel, the pivoted paper-roller bed, the key-levers, and the lever actuated by said key-levers, of the brake, the roller-bed-shifting arm, and the spacing-lever, all connected with said lever actuated by the key-levers.

16. The combination, with the reciprocating feed-rack, paper-roller slide, and the spacing-lever having the inclined finger acting on the stud-pin of the feed-rack, of the spacing-key resting on said spacing-lever adjacent to the feed-slide, and the lever operating said spacing-key, substantially as described.

17. The combination of the auxiliary push-brake with the power-driven rotary type-wheel, the brake-wheel on said type-wheel

shaft, the key-levers, and the brake normally controlling the operation of the type-wheel and being actuated for the release and rotation of the type-wheel by said key-levers, said
5 auxiliary push-brake being to retain the type-wheel and prevent rotation and waste of the driving-power when repeating letters, substantially as described.

18. In a type-writer, a guide-plate, such as
10 r^8 , in combination with and located under the paper-roller, the semicircular clip, as r^3 , partly surrounding the paper-carrying roller on its upper side, the bar, such as r^4 , hinged at one end to the end post of the paper-roller slide
15 and having said clip attached so as to swing upward from the roller in the vertical plane of said roller, and said clip having the longitudinal slot exposing the portion of the paper to be printed on to view, substantially
20 as described.

19. In a type-writer, the combination of a

series of parallel pivoted levers, such as J, an oscillating frame P O P' O¹ O³, having the bar P located below and parallel to the outer ends of the said levers, the two arms, such as 25 O² O⁵, the brake-block L, with which one of said arms is connected, and the hinged bed, such as S, with which the other of said arms is connected, supporting the paper-carrying roller, and the letter-spacing lever, such as t^3 , 30 whereby the said spacing-lever, bed, and brake-block are actuated alike by the depression of any one of the said levers J irrespective of its position in the key-frame, substantially as shown and described. 35

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK MYERS.

Witnesses:

C. DYMOND,

H. P. SHOOLERIDGE.