

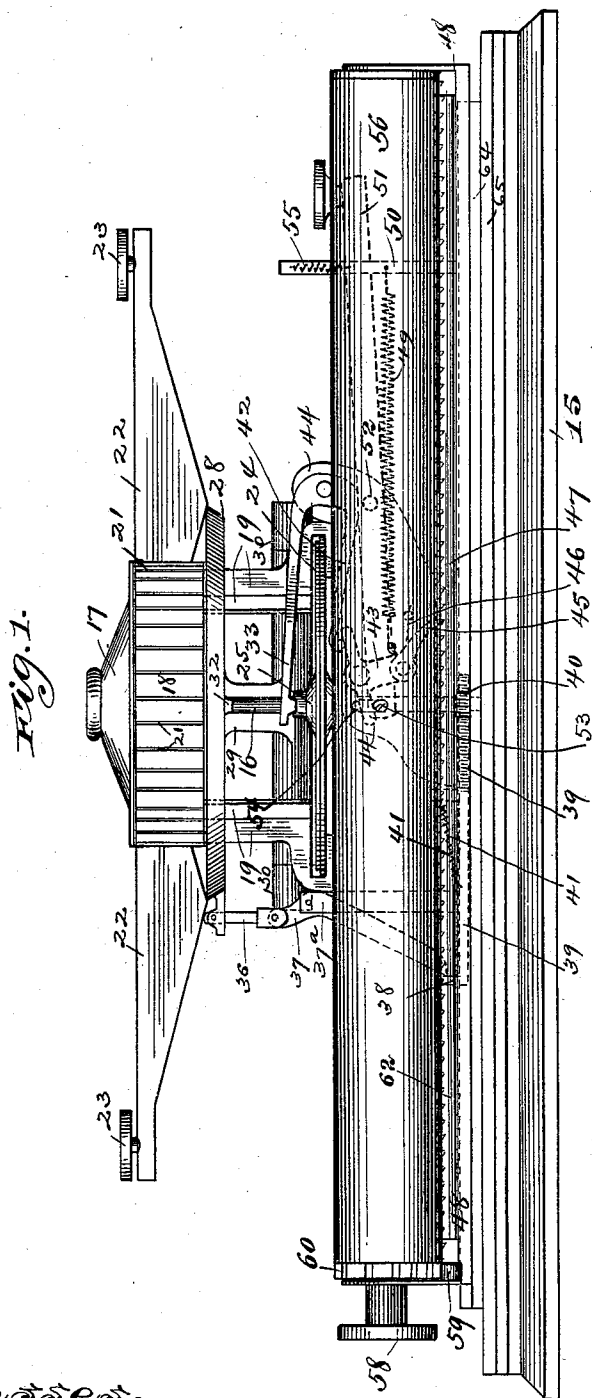
(No Model.)

6 Sheets—Sheet 1.

W. P. QUENTELL.
TYPE WRITING MACHINE.

No. 517,663.

Patented Apr. 3, 1894.



Witnesses,
J. M. Mann,
J. C. Goodwin

Inventor,
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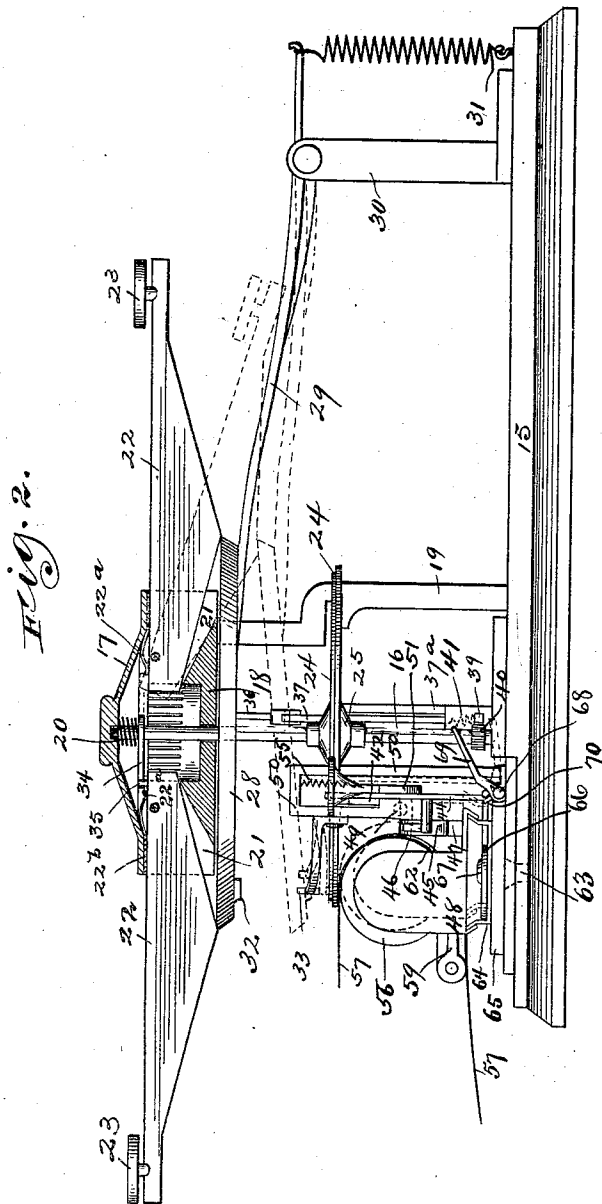
(No Model.)

6 Sheets—Sheet 2.

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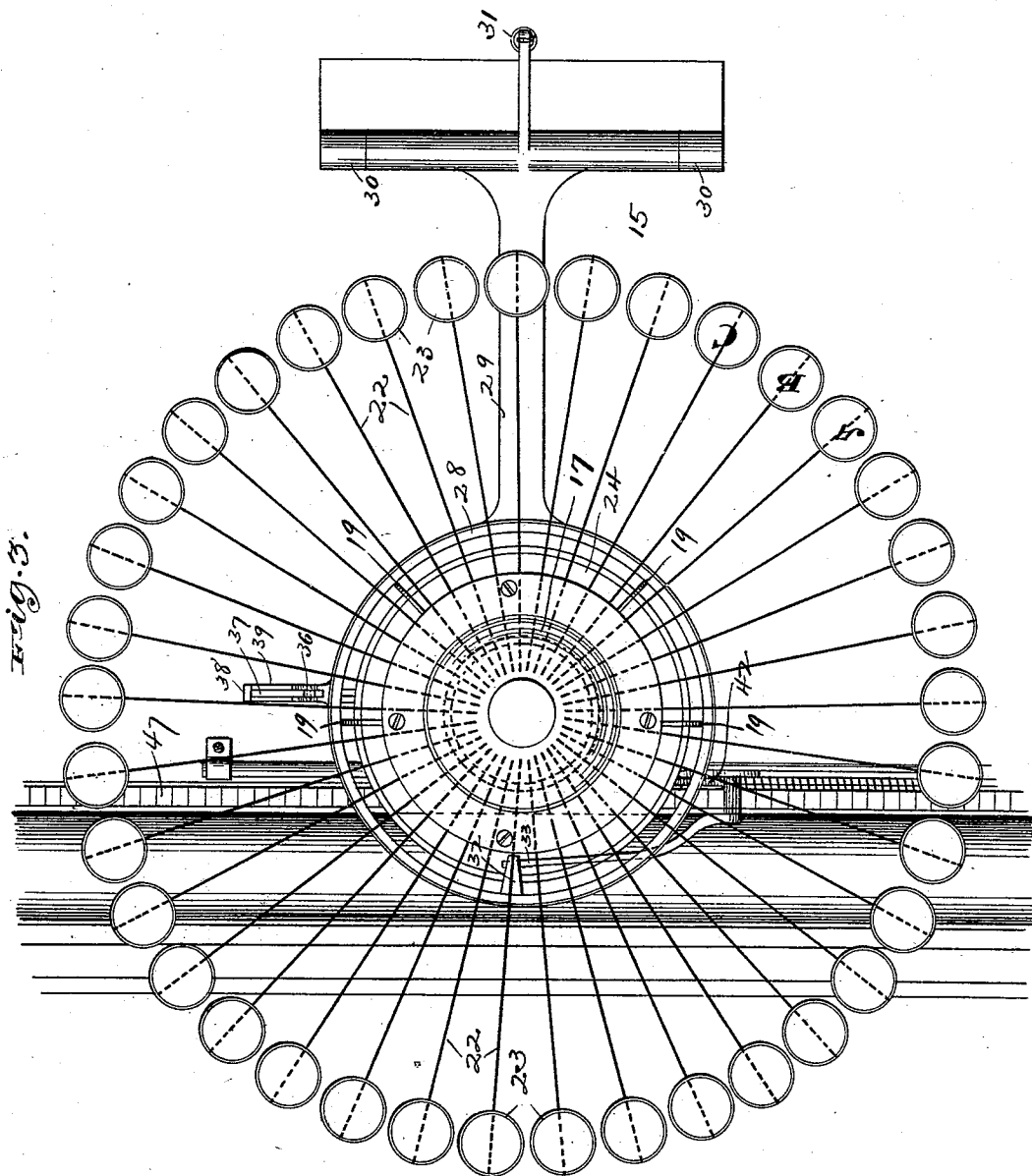
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6 Sheets—Sheet 3.

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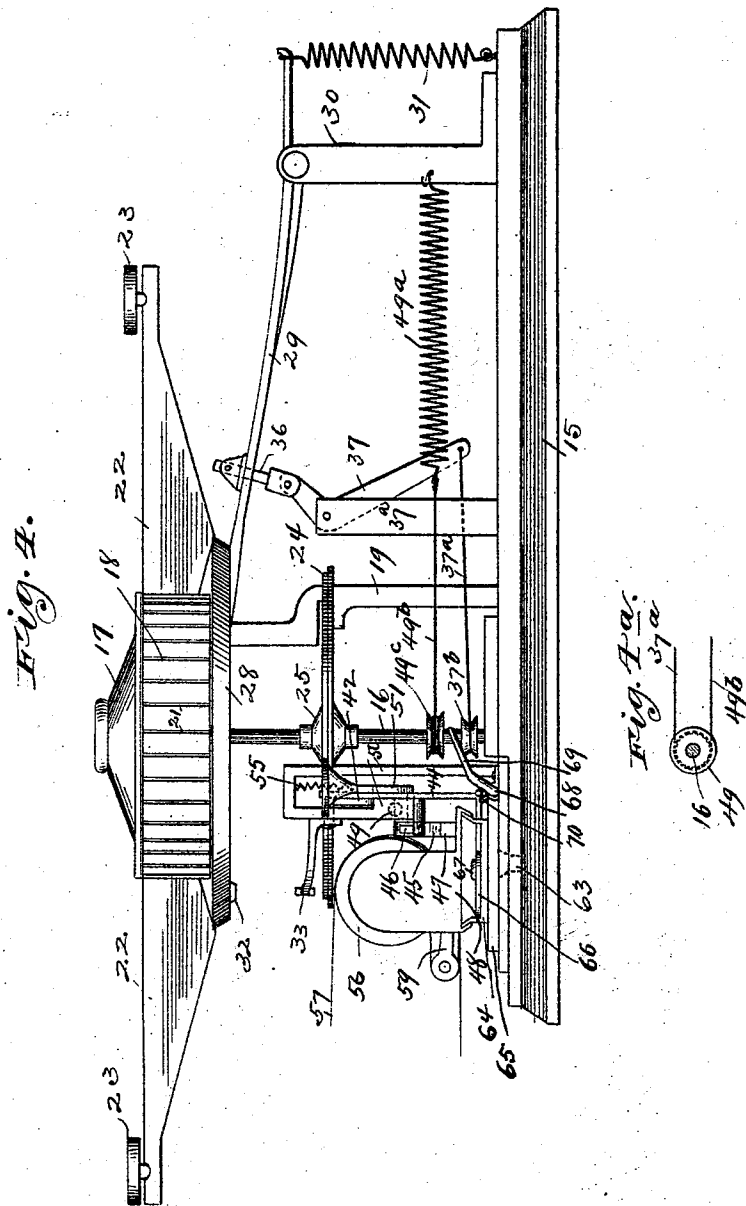
(No Model.)

6 Sheets—Sheet 4.

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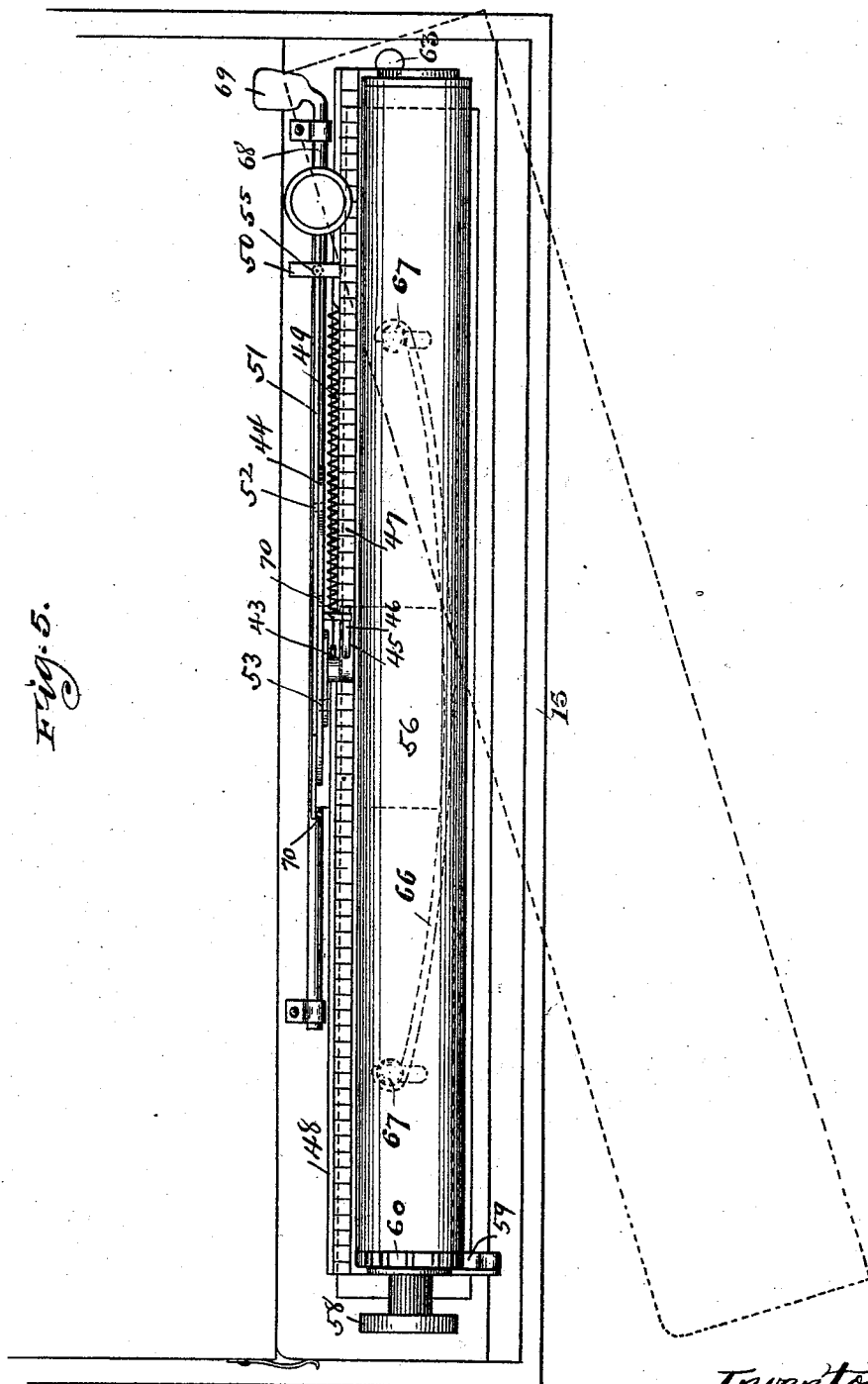
6 Sheets—Sheet 5.

W. P. QUENTELL.
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Fig. 5.



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6 Sheets—Sheet 6.

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Fig. 6.

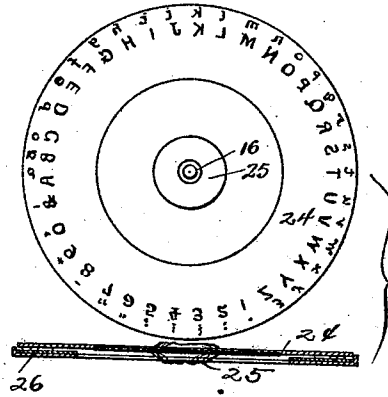


Fig. 7.

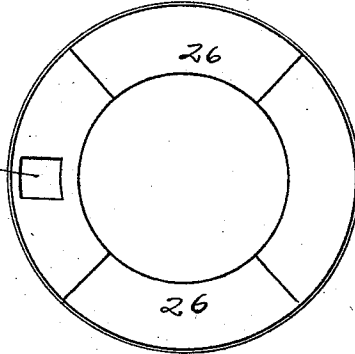


Fig. 8.

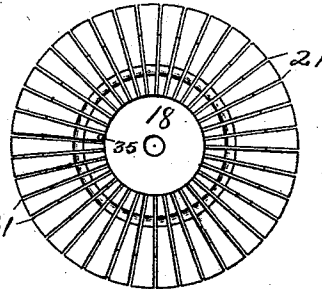


Fig. 9.

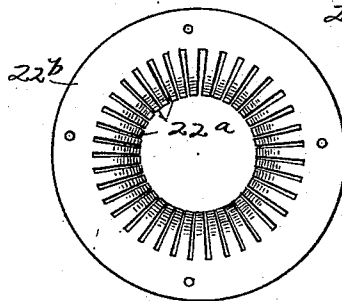
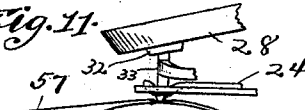


Fig. 11.



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UNITED STATES PATENT OFFICE.

WILLIAM P. QUENTELL, OF KANSAS CITY, MISSOURI.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 517,663, dated April 3, 1894.

Application filed August 21, 1893. Serial No. 483,654. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. QUENTELL, of Kansas City, Missouri, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to a typewriting machine of the class wherein is employed a rotating type wheel having type characters upon its lower side and which by its rotation is brought to the printing position at which point a printing lever or hammer is depressed impinging the type upon the paper.

The object of the invention is to simplify the construction and improve the operation of machines of this class, and my invention is designed to afford a typewriting machine which can be produced at small cost and which is capable of performing rapid and accurate printing.

In the general construction of the machine there is embodied in a suitable base, a vertical shaft which is stepped into the base and adapted to be rotated in its seat and to be held therein by a cap which is secured upon a slotted disk through which the shaft loosely passes, said disk being supported from and connected with the base by suitable standards. A series of key levers is pivotally mounted upon this slotted disk and is adapted to impinge upon an annulus carried by a lever pivotally mounted upon a standard, also rising from the base, said lever being controlled so as to normally sustain the annulus in its raised position by a suitable spring. The standards which carry the slotted disk also support an ink pad which is in the form of a flat ring of sheet metal. The type wheel comprises a disk of rubber which is vulcanized upon a metal plate of smaller diameter, and the centers of these disks or plates are perforated and have hubs with a central bore through which the central shaft passes and to which they are secured so as to effect the rotation of the type wheel with the central shaft. A printing lever of the bell crank type is pivotally mounted on a suitable support rising from the carriage support and has one member thereof arranged in the path of a projection carried by the annulus, which is depressed by the key lever, and when this an-

nulus is depressed the printing arm is likewise forced down, striking the type wheel from above and forcing the type character on its opposite surface through a perforation in the ink pad support and upon the paper. The other arm of this bell crank printing lever is engaged by a spring controlled trip arm which returns it to its normal position after the printing is effected. The printing arm is also connected with the spacing mechanism and permits a step by step movement of the paper carriage as the arm is operated. The paper is carried upon a suitable roller which is mounted in a sliding carriage, and the latter is pivotally connected with the base so that the carriage may be thrown out and the writing brought into view. A selective device is employed which consists of a lever or arm carried by the central shaft, and the latter is rotated whenever one of the type levers are depressed by means of a rack and pinion which is moved by a spring. The depression of the type lever effects the tensioning of the spring which moves the rack and causes the rotation of the central shaft carrying the arm with it until the latter comes in contact with the lever which is depressed and the position of the type upon the type wheel is such that whenever the wheel is arrested by the engagement of the selective arm with the actuated key lever the letter corresponding to that of the key lever will be brought into position over the perforation in the ink pad.

Suitable provisions are made for printing upper and lower case characters, and for the several characters ordinarily employed in typewriting, and these in conjunction with a spacing lever and line lever, constitute, in connection with the parts above described, the distinguishing characteristics of my invention.

The invention provides a typewriter which can be cheaply constructed and which has a key for each character, and therefore embodies the principal advantages of the more expensive machines, the smaller ones having been, prior to my invention, provided with a single printing lever and their action necessarily has been slow.

A feature of the present construction is

the arrangement of the type levers in such manner that those which are most used are arranged on the side of the machine next to the operator. The type levers are also so
 5 pivoted that rapidity may be secured in conjunction with ease of operation, the leverage being sufficient to enable the operation of the machine with small effort as with the most approved forms of modern expensive
 10 typewriters.

Referring to the drawings, Figure 1 is a front elevation with some of the key levers removed. Fig. 2 is a side elevation, partly in section, a secondary position of some of the
 15 operating parts being shown by dotted lines. Fig. 3 is a broken plan view. Fig. 4 is a side elevation showing a modification of the means for revolving the type wheel. Fig. 4^a is a detail view showing the manner of securing the
 20 cords with the sheaves on the upright shaft. Fig. 5 is a detail plan view of the paper carriage and a part of its operating mechanism, showing means whereby it can be shifted in order to change from lower to upper case
 25 characters, and a secondary position of the roller is indicated by dotted lines. Figs. 6 to 11 inclusive are detail views, in which Fig. 6 is an inverted plan view of the type wheel. Fig. 7 is a view of the ink supporting pad. Fig. 8 is a plan view of the slotted disk. Fig.
 30 9 shows a disk having spring fingers for returning the type levers to their normal position. Fig. 10 is a cross section through the paper roller and its supporting base and showing a sheet of paper and means for rotating the roller and locking it in position for the line; and Fig. 11 is a broken detail showing the annulus and printing lever depressed and
 35 a type character forced through the opening in the ink pad ring and impinging the paper on the roller.

In the drawings, 15 represents the base in which is stepped the upright shaft 16 which at its top has a cap 17 which is connected with
 45 a slotted disk 18, said disk being apertured at its center for the passage of the shaft 16. Said disk is supported by the standards 19 which are rigidly secured with the base. A spring 20 having its upper end confined beneath a cap 17 and its lower end engaged with the shaft 16 maintains the latter in its seat. The disk 18 has a series of vertical slots 21 in which are pivoted the ends of the key levers 22. The arrangement of said levers is particularly shown in Fig. 3 of the drawings. Each of them carries the usual button or disk
 55 23 on which a type character will be indicated, those which are most used being arranged at the front of the machine or next to the operator. The type levers 22 are normally sustained in a horizontal position by means of spring fingers 22^a, formed by slitting radially the annular plate 22^b, shown in Figs. 2 and 9. These fingers are curved in the direction of their length, as shown in the sectional view of Fig. 2, and the plate 22^b is secured on top of the disk 18 by means of screws
 60 65

turned into the slotted disk 18. The spring fingers bear at their inner ends upon the inner ends of the type levers 22 beyond their
 70 pivots, as clearly shown in Fig. 2.

Mounted upon the shaft 16 is the type wheel 24 which comprises a disk of rubber vulcanized upon a plate of smaller diameter and provided with a hub 25 which is secured
 75 with the shaft 16. The cross sectional view of Fig. 6 shows the construction of this type wheel and within it is fitted the ink pad 26, a face view of which is shown in Fig. 7. This ink pad is supported by the standards 19 and
 80 is stationary. It has a perforation 27 therein through which the type characters are forced by the flexure of the disk upon which said characters are formed.

28 represents an annulus through whose
 85 opening the shaft 16 passes, said annulus being mounted upon an arm 29 pivoted upon a post 30 and controlled by the spring 31. Normally said annulus is raised so that it is in contact with the lower sides or edges of
 90 the type levers 22. When one of said key levers is depressed, as for example, in Fig. 2, the annulus is forced down as shown by the dotted lines, and the projection 32 thereon engages the printing lever 33, causing the lat-
 95 ter to strike the type wheel and forcing the character upon said type wheel through the aperture in the ink pad support and upon the paper, as clearly shown in Fig. 11.

The selection of the type is performed in
 100 the manner following: The shaft 16 carries an arm 34, the normal position of which is at rest against a stop 35, shown in Fig. 2. The annulus 28 carries a link 36 which is pivotally connected with and adapted to operate
 105 a bell crank lever 37 pivoted upon a post 37^a upon the machine base. The lower end of the bell crank lever 37 normally engages the up-turned end 38 of a rack bar 39, as shown by the dotted lines in Fig. 1. Said rack bar
 110 has its rack teeth enmeshed with a spur gear 40 on the lower end of shaft 16, and a spring 41 normally tends to pull the rack bar toward the shaft, but this tendency of the spring is overcome by the normal action of the bell
 115 crank 37. Now when the type lever is depressed and the annulus forced down, the bell crank will be rocked on its pivot, the lower end being swung away from the up-turned end 38 of the rack bar and the con-
 120 trolling spring of the latter will cause it to move end-wise, thus effecting a rotation of the shaft through the spur gear. The type characters on the type-wheel bear a certain relation to those on the key lever, and when
 125 one of the key levers is depressed, thus effecting the rotation of the shaft, the extent of the rotation will be determined by the movement of the arm 34 which will permit the rotation of the shaft 16 and the type wheel
 130 carried thereby, until said arm 34 comes in contact with the raised end of the key lever. When this occurs the motion of the shaft and of the type wheel will be arrested, and at this

point the character upon the type wheel corresponding to that of the depressed key lever will be in position immediately over the aperture in the ink pad plate and beneath the printing arm. The annulus is free to descend until it engages the printing arm, whereupon the latter strikes the type wheel immediately over the selected character and the printing is effected upon the paper beneath. Upon the release of the annulus the spring 31 overcomes the spring 41 through the connected parts and shifts the rack, thus returning the shaft, type wheel and selective arm 34 to their normal positions. The printing lever 33 has a member 42 which extends forward beneath the lever 33 with its end engaging a T-shaped rocker 43 pivoted to the standard 44 on which the lever 33 is also pivoted. This T-shaped rocker has at its lower end a dog 45 normally depressed by a spring 46, and the end of the dog is adapted to engage the rack 47 which is connected with the paper carriage 48. A spring 49 has one end fixed to a post 50 on the base, and its opposite end secured with the rocker. When the printing lever is depressed, as above described, the lever 42 will swing the rocker on its pivot thus moving the dog the length of one tooth of the rack and the spring 46 will swing the dog into engagement with a new tooth, while the spring 49 will move the carriage end-wise a space equal to the distance between the teeth.

51 is a spacing bar which is pivoted on the standard 44, at 52, and the forward end of this lever carries a pin 53 which rides in a slot 54 in the standard 44 beneath one member of the rocker. The spacing lever is normally upheld by a spring 55, and when said lever is depressed the rocker may swing on its pivot, moving the dog into engagement with a new tooth and tensioning the pull back spring 49, thus enabling the spacing without printing.

56 represents the roller of the paper carriage, and 57 the paper passed around said roll, as shown in Figs. 10 and 11. This roller has the hand wheel 58 at its end by which it may be turned to bring the paper into position for a new line of printing, and a dog 59 engaging the teeth of a ratchet wheel 60 locks the roller against movement after each partial rotation. A spring 61 presses the dog 59 into engagement with the ratchet wheel, and a curved spring shield 62 clamps the paper upon the roller. The paper carriage is pivoted at one end upon the vertical pivot 63 and it may be swung on said pivot in the position shown by the dotted lines in Fig. 5 to bring the line of printing into view.

Means are also employed for shifting the paper carriage laterally in order to permit the printing with different fonts of type. The upper and lowercase letters are arranged, respectively, in concentric series upon the lower face of the type wheel, as shown in Fig. 6, and the lateral movement of the paper roller toward the axis of the type wheel will

bring the paper in position to receive an impression from the inner circle of type. Mechanism by which this is effected is shown in Figs. 2, 4 and 5. The paper carriage has a base 64 which is capable of sliding laterally upon the bed 65, this bed in turn being pivoted to the base of the machine by the pivot 63. The carriage is normally held in position for printing with the lower case by means of a curved spring 66 (Fig. 5), whose middle is fastened and whose ends engage studs 67 of the bed 65, the base plate 64 being slotted to permit the movement of the carriage upon said studs.

68 represents a rock shaft having a thumb piece 69 and with its middle engaged with the carriage to a stud 70. The rocking of this shaft effects the lateral shifting of the carriage to permit the use of the inner circle of type on the type wheel, and the spring 66 will return the carriage to its normal position when downward pressure on the thumb piece 69 is released.

In Fig. 4 I have shown a modified construction of the means for turning the central shaft and type wheel. In this instance the bell crank 37 has a cord 37^a at one end thereof which passes around a small sheave 37^b on the central shaft 16, and a spring 49^a has a cord 49^b secured to its end and turned around a sheave 49^c on shaft 16. The cords 37^a and 49^b are turned about their sheaves in opposite directions, as shown in the detail of Fig. 4^a, and the swinging of the bell crank 37 will turn the shaft in one direction thus winding up the cord 49^b and increasing the tension of spring 49^a. When the type lever is released and the parts returned to their normal position, the spring 49^a will, by reason of its tension and through the cord 49^b, rotate the shaft and return the type wheel to normal position.

I claim—

1. In a typewriting machine, the combination with a rotatable shaft carrying a type wheel thereon, a series of pivoted key levers radially arranged with reference to said shaft, a pivoted annulus adapted to be depressed by the depression of any one of the series of levers, a printing mechanism actuated by said annulus when depressed, means for rotating the central shaft and the type wheel carried thereby, an arm carried by the shaft and adapted to arrest its movement by engagement with the key lever depressed, and means for returning the shaft to its normal position, substantially as described.

2. In a typewriter machine, the combination with a rotatable shaft carrying a type wheel thereon, of a series of pivoted key levers radially arranged with reference to the shaft, a pivoted annulus adapted to be depressed by the depression of any one of the series of keys, a printing lever arranged in the path of the annulus, a rack bar geared with the central shaft, a spring connected with said rack bar and adapted to reciprocate

the latter whereby to rotate the central shaft and its type wheel to the printing position, and a connection between the annulus and the rack bar whereby the latter is moved to
5 return the type wheel to its normal position, substantially as described.

3. In a typewriter, the combination with a vertically arranged rotatable shaft carrying a type wheel thereon, a stationary support
10 through which the shaft loosely passes, a stop arm carried by the shaft, a series of key levers pivoted near their inner ends upon the stationary support, springs for maintaining said levers in an elevated position, a pivoted
15 annulus adapted to be engaged by any one of the series of levers, a printing mechanism actuated by the annulus, means for rotating the central shaft and its type wheel to the printing position, said means being positively

actuated by the movement of the annulus, 20 and a spring connected with the latter and adapted to return the shaft to its normal position, substantially as described.

4. In a typewriter, the combination with a central rotatable shaft, a key lever support 25 having slots in its periphery and mounted in a stationary position upon the base, a series of key levers radially arranged with reference to the shaft and pivoted upon said support, a cap secured thereto for confining the shaft in 30 its bearing, and an annular disk having its perimeter slotted to provide spring fingers adapted to engage the type levers to maintain them in position, substantially as described.

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