(No Model.) 2 Sheets—Sheet 1.

W. H. BARTEN.

TYPE WRITING MACHINE.

No. 499,498. Patented June 13, 1893.

Fig. 1.

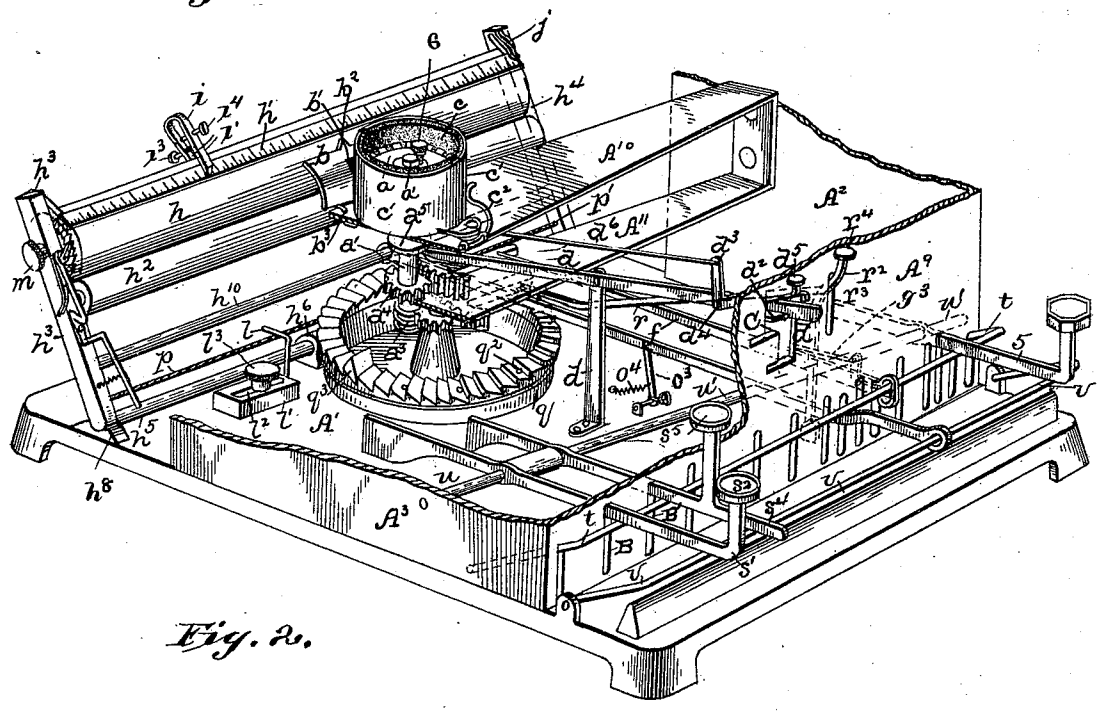


Fig. 2.

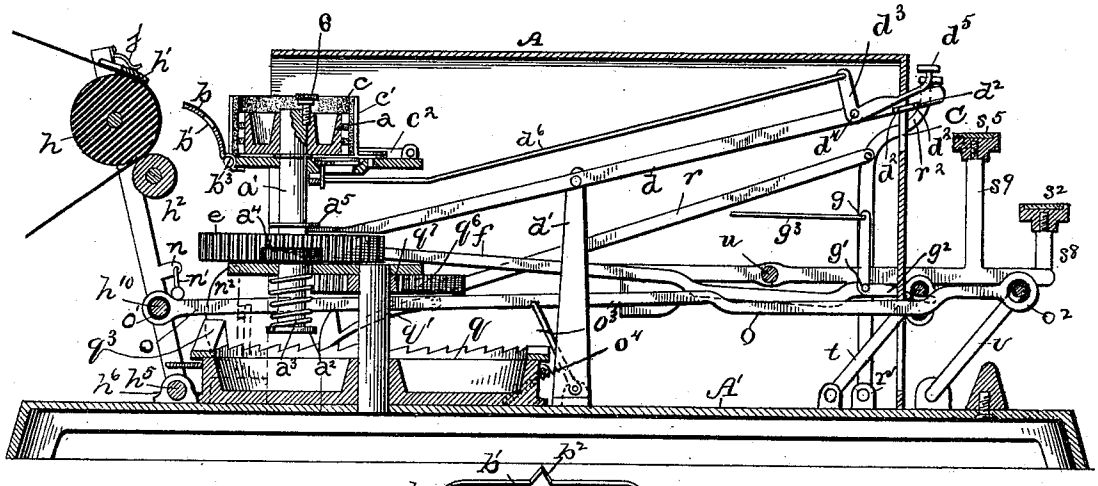
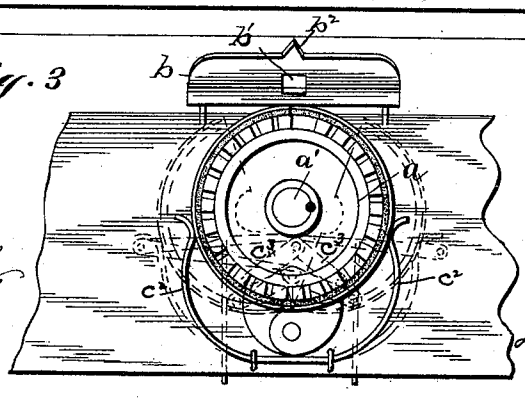


Fig. 3



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(No Model.) 2 Sheets—Sheet 2.

W. H. BARTEN.

TYPE-WRITING MACHINE.

No. 499,498. Patented June 13, 1893.

Fig. 4.

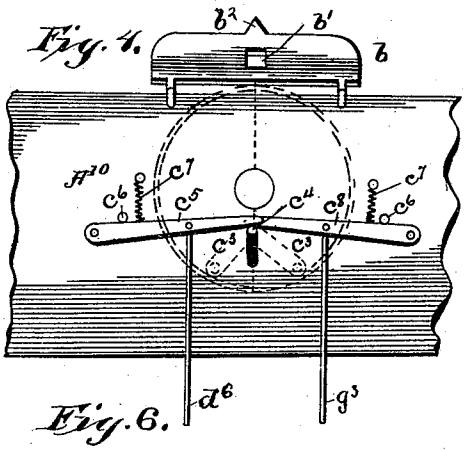


Fig. 5.

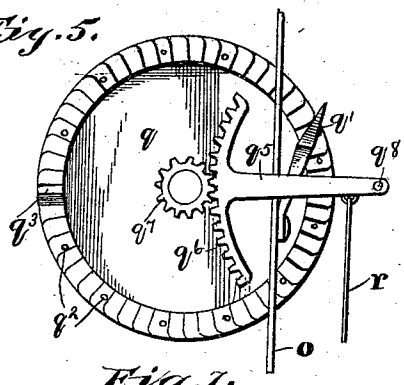


Fig. 6.

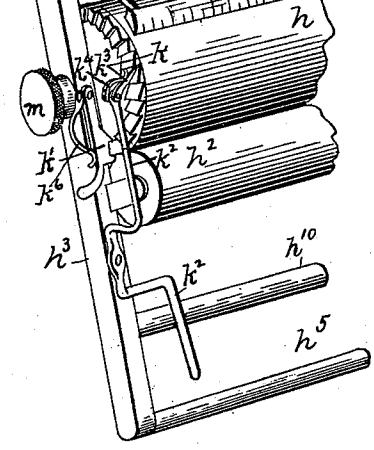
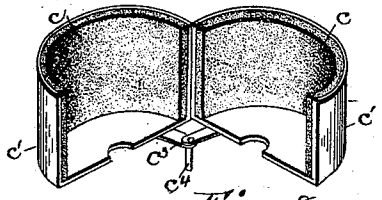


Fig. 7.

Fig. 8.



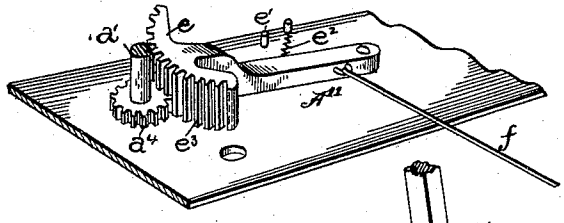


Fig. 10.

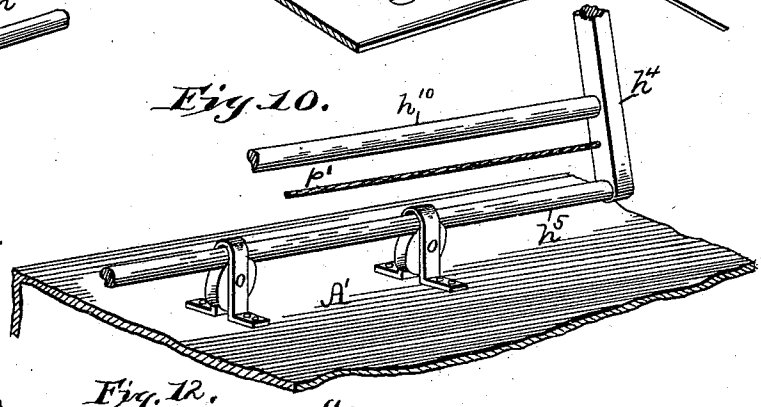


Fig. 9.

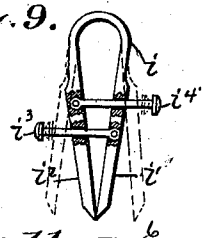


Fig. 11.

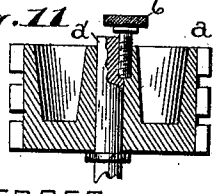
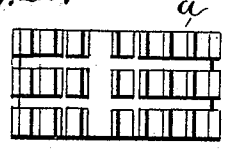


Fig. 12.



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY BARTEN, OF NORTH BOSTON, NEW YORK.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 499,498, dated June 13, 1893.

Application filed May 25, 1892. Serial No. 434,377. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY BARTEN, a citizen of the United States of North America, residing at North Boston, in the county of Erie and State of New York, have invented new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention has relation to that class of type writing machines, in which the printing characters are arranged on a sector, wheel, or cylinder in one or more rows or banks of type.

The objects of my improvements or invention are: first, to provide an inking-pad to rest against the type arranged upon a sector, wheel, or cylinder; second, to provide mechanism for pressing away from said type said inking-pad, and to shift to position a row or bank of type, and to rotate to position a letter or character to be printed; third, to provide a paper carriage holding against a platen or roller the paper or object to receive the impression, and to propel the platen or roller against the letter or character to be impressed; fourth, to provide mechanism to move the paper carriage toward the left or end of the line the distance of the space of a letter or character, and at a certain distance or number of spaces before reaching the end of the line to give a signal, as the ringing of a bell, and when the end of the line is reached, to prevent the printing of another character, but to move the paper carriage back to the right or the beginning of the line, and at the same time to turn the feed roll and raise the paper ready to receive the next line, and as soon as the beginning of said next line is reached, to impress the letter or chacacter which would be impressed beyond the end of the former line or on the character already printed in said former line, in the first space of said next line.

All of the operating parts for accomplishing the objects mentioned above, and others that may appear are driven by any one of the key levers, except the operating parts for shifting to position a row or bank of type.

My invention accordingly consists of the combinations, constructions, and arrangements of parts, as above, and as hereinafter more particularly described in the specification, and pointed out in the claims.

In the accompanying drawings like letters and like numbers refer to like parts in all the figures.

Figure 1, is a perspective view of a type writing machine which embodies my invention, the housing being shown in section, and some of the key levers omitted. Fig. 2, is a central longitudinal vertical section of the invention complete. Fig. 3, is a detached plan view of the type wheel, the inking pad and the levers for operating the pad as hereinafter described. Fig. 4, is an inverted view of the levers for operating the inking pad. Fig. 5, is a detached plan view of the barrel for moving the carriage longitudinally in both directions. Fig. 6, is a perspective view of the left hand end of the carriage, showing the mechanism for rotating the platen when the end of a line is reached. Fig. 7, is a detached perspective view of the inking pad, the same being shown open. Fig. 8, is a detached perspective view of the sector for rotating the type wheel. Fig. 9, is a detached view of a clasp for the carriage scale. Fig. 10, is a perspective view of the lower portion of the carriage, showing the manner of supporting it. Fig. 11, is a detached vertical section of the type wheel, showing the manner of detachably connecting it to its shaft. Fig. 12, is a detached view of a portion of the type wheel, showing a vertical series of the type omitted.

A, A′, A^2, A^3, designate respectively the top, bottom, right, and left sides of the housing or outer frame to which the operating parts of the machine are directly or indirectly attached. A^9 represents the top A of the housing extended forward said extended part being bent down and attached to the bottom A′; the front part A^8 A^9 contains slots B, B′, &c., only a sufficient number being shown to illustrate the principle, and avoid crowding the drawings; the slots B, B′, &c., have their upper ends in a straight line parallel to the bottom A′ of the housing, said upper ends forming a rest for the key levers when not depressed by the operator to drive the machinery; the side A^9 also contains slots between the key lever slots, to allow different levers to pass through the

side A^9, and to act as guides for the levers; the slot through which the shift lever passes is of peculiar form one side being a straight edge, and the other edge being graduated in a step like form, the steps approaching the straight edge toward the bottom. A small groove or niche extends into the side from each step, so that when the shift lever is arrested by a certain step a small projection from the shift lever catches into the small groove or niche, and holds in position a certain row or bank of type upon the type wheel.

A^{10}, A^{11} are parallel supports arranged one above the other, and attached to the right and left sides of the housing, to the bottom, top or in any manner to give rigidity to said support.

The housing is made of a single piece, or may be of more pieces of sheet metal or any material that can be cut and bent into the desired shape, size, and form as shown in Fig. 1.

a represents the type wheel, sector or cylinder which is attached to the upright shaft a'. The shaft a' is journaled in the parallel supports A^{10}, A^{11} so that the shaft a' and type wheel a may be shifted vertically or rotated horizontally.

a^2 represents a head at the bottom of the shaft a'. Between said head and the lower side of the lower support A^{11} is a spiral spring a^3, of which one end is attached to the head a^2, and the other end to the lower side of the lower support A^{11}; said spring is to press the shaft downward, and to rotate the shaft and type wheel to its original position after a character has been printed and the key lever released, also when the key lever is depressed to steady the movement of the shaft and type wheel, and facilitate vertical as well as horizontal alignment; a^4 is a small gear wheel or pinion rigidly attached to the type wheel shaft, and by which the shaft and type wheel are rotated. Said pinion also acts as a shoulder to prevent the shaft and type wheel from falling below a certain distance and to rest the shaft upon the upper side of the lower support A^{11}, when the upper bank or row of type is in position to print.

a^5 is a collar surrounding the type wheel shaft. Under this collar a shift lever catches to shift the type wheel vertically.

b designates the type shield composed of a thin partly cylindrical shaped substance having a hole b' through which a single character is admitted at a time, when the platen or roller against which the paper or object to receive the print is held is propelled against the type shield, and the type shield against the type wheel, and the paper against the character appearing through the hole b'; there is a projection b^2 on the upper side or edge of the type shield just above the hole b' to work in combination with the scale h', and clasp i, in printing characters in certain places, indenting paragraphs, arranging columns, &c.

b^3, b^3 designate hooks by which the shield is hung to the support A^{10}. The ends of said hooks are turned upward to strike and rest against the lower side of the support A^{10}, after the shield has fallen forward a certain distance on account of its own weight, so as not to be in contact with either the type wheel, or paper when the key lever is released or the machine is at rest.

c represents the ink pad composed of felt or other substance suitable for holding ink and imparting the same to the type faces when the pad is pressed against them; said pad is attached to the inner side of a segment of a hollow cylindrical shaped base c' composed of metal or other suitable material that will preserve its cylindrical form; in this case the ink pad (including base c') is composed of two semi-cylindrical segments pivoted together to the upper support A^{10} so that the segments may be pressed apart or away from the type wheel, in order that the type wheel may be rotated, or shifted, without the type faces rubbing or dragging against the ink pad, and so that the ends of the segments of the pad toward the type shield, and paper will be out of the way, and allow the platen or roller, paper or object to receive the print, and type shield to be propelled against the type wheel; the two segments are pressed together or against the type wheel by a spring c^2; the two segments are connected by a toggle joint c^3, which on being straightened presses apart or away from the type wheel the ink pad segments. This toggle joint is attached to the lower sides of the pad segments, and works in a depression or groove in the upper side of the support A^{10}; a pin or projection from the knee of the toggle joint at c^4 passes through a slot in the support A^{10}, said slot being large enough to give the pin or projection from the knee of the toggle joint at c^3 sufficient play for working back and forth.

c^5 designates a lever pivoted to the lower side of the support A^{10} and held against a projection c^6 on the lower side of said support by a spring c^7 one end of said lever extending behind the pin or projection which projects through the slot in the support A^{10} from the knee of the before said toggle joint.

c^8 is another lever attached to the lower side of the support A^{10} in a manner similar, and for the same purpose as lever c^5; these levers are arranged one a little above the other so that when one is drawn forward to straighten the toggle joint, the other is not affected.

d represents the shift lever fulcrumed to the upright support d'. One end of said shift lever extends beneath the collar a^5, and the other end extending through the slot C in the side A^9, that side of the lever having a projection d^2, which is toward the step like graduated side. Said projection catches into the small niches or grooves to hold in position a row or bank of type; to said shift lever d is piv-

oted a bell crank $d^3\,d^4\,d^5$. At d^4, one arm of said bell crank extends upward, and has attached to its upper end d^3 a rod or lever d^6 of which the other end is attached to the lever c^5; the other arm d^5 d^4 extends through the slot C, and a little above the end of the shift lever d protruding through said slot C, so that when the end d^5 is depressed by the key or finger piece at d^5, the ink pad segments will be pressed away from the type wheel, after which d^5 will press against the forward end of the lever d, and press down the same and raise the type wheel.

e represents a sector of a gear wheel pivoted to the upper side of the support A^{11}, and held against the projection e' when said sector is at rest, by a spring e^2. The periphery e^3 is of sufficient width so that when the type wheel shaft is shifted vertically, and the pinion a^4 with it the sector of the gear wheel and the pinion will not be thrown out of union.

f designates a rod or lever, of which one end is attached to a gear wheel sector e, and the other end of said rod or lever to the rod t' t^2 of the pivoted rocking frame or bail t in order that when said rocking frame is depressed a certain distance, by a certain key lever, the gear wheel sector is rotated a certain distance, and a certain letter or character is rotated to position for printing.

g g' g^2 designate a bell crank pivoted to the rod or lever f at g', The arm g g' of said bell crank extends upward and has attached to its upper end g a rod g^3 of which the other end is attached to the lever c^8, The other arm g' g^2 extends forward and just below the rod t' t^2 of the pivoted rocking frame or bail t. The hole in the end of the rod f through which the rod t' t^2 of the pivoted rocking frame or bail t passes is somewhat oblong, so that when the rod t' t^2 is depressed by any one of the key levers, the end g^2 of the bell crank g g' g^2 will be depressed without affecting rod f, and the segments of the ink pads pressed away from the type-wheel. As soon as the end g^2 is depressed to the bottom of the hole the rod f is affected and pressed down toward the front, sector e drawn forward, pinion a^4, shaft a', type wheel a rotated, and a letter or character brought to position.

h represents a roller or platen, against which the paper or object to receive the printing is held by the bar h' upon which is marked a scale, and by the roller h^2.

h^3, h^4 designate the upright pieces in which the scale bar h', roller or platen h, and roller h^2 are journaled; the lower ends of the upright pieces h^3, h^4 are joined by a rod or bar h^5, the lower ends of the upright pieces forming an even and continuous edge or surface with bar h^5; by the bar h^5 the paper carriage is attached to the bottom housing A′ by the closed boxes h^6, h^6 at the center, (to do away with friction the open boxes may be formed of a small wheel as illustrated in Fig. 10 journaled in the bottom housing vertically, and so as to rotate in the direction in which the paper carriage moves, parallel to the front edge of the machine, said wheel having a groove in its periphery, the groove forming a guide or socket in which the paper carriage could rotate, and move in the direction of its length, also the center journals could be made of a wheel of the kind just described, and a staple, or something of that description attached over the top of bar h^5 to the bottom housing A′ to hold the rod h^5 down into the groove on said wheels) so as to allow the paper carriage to be propelled against, and away from the type wheel, and moved in the direction of the length of the paper carriage.

i represents a clasp having the two numbers i', i^2, which are pressed together by a spring or its equivalent at i, so that when an object is put between said members i', i^2 the clasp will be firmly attached to the object; the clasp serves to indicate when clasped on the scale bar h', where to print a character, begin a heading, line, indent a paragraph, &c.; from the member i' extends a projection i^3 by the member i^2, and from the member i^2 another projection i^4 extending by i', so that when the projections are pressed together the members i', i^2 are pressed apart, and the clasp may be taken off from an object, or attached to it; this clasp may also be used for other purposes than with the scale and projection b^2 of the shield; as to hold together two or more copies when manifolding.

j represents a spring attached to the upright piece h^4, and pressing the scale rod against the paper and roller or platen.

k represents a ratchet wheel attached to the end of the feed roll h.

k' designates a pawl pivoted to the upright piece h^3. Said pawl falls into the teeth of the ratchet wheel, and prevents the feed roll from turning backward. k^2 designates a reciprocating lever pivoted to the upright piece h^3, and has jointed to itself a small pawl k^3 which when the lever is moved in one direction by the spring k^4 slides over the teeth of the ratchet wheel k, but when the lower end of lever k^2 is pressed in the opposite direction by the projection l the pawl drops into the teeth of the ratchet wheel, and thus turns the feed roll and raises the paper; the pawl k^3 is pressed toward the teeth of the ratchet wheel by the spring k^4 and pawl k' by spring k^6.

l is a projection extending across the line in which the lever k^2 at its lower end passes. Said projection is attached to a base l' having a slot l^2 through which a screw l^3 passes to attach said projection to the bottom housing A′, the slot l^2 and base l' being long enough to admit attaching the projection nearer to, or farther from the center to press back the lower end of the lever k^2 less, or more, and to rotate the feed roll and raise the object to receive the printing less, or more as the pawl k^3 rotates a less, or greater number of teeth on the ratchet wheel or smaller, or greater teeth as the paper carriage is moved toward the beginning of the next line and the lower

end of lever k^2 is arrested by the projection l. m designates a thumb screw by which the feed roll may be rotated.

n designates a projection from the upright piece h^4. To this projection a hammer n' is hung which when the paper carriage is moved to within a certain number of spaces from the end of the line strikes a bell n^2 attached by a support and base similar to l' to the bottom housing A′ when the platen or roller is propelled against the type wheel.

o represents a lever or rod having in one end a hole o' through which the rod or bar h^{10} passes last said rod being attached at its opposite ends to the upright pieces h^3, h^4 of the paper carriage and parallel to and a little above rod h^5. Lever o also has a hole o^2 in the other end the rod v' v^2 of the pivoted rocking frame or bail v passing through said hole o^2.

o^3 is a lever hinged to the bottom housing A′, and pivoted at its upper end to lever o, a spring o^4, attached to the bottom housing A′ and the crank or lever o^3, so as to draw the lever o toward the paper carriage, act as a guide or support to prevent the rod or lever o from moving sidewise when the paper carriage moves in the direction of its length, to propel the roller or platen h away from the type wheel, and to draw up toward the perpendicular the pivoted rocking frame or bail v after the key lever has been released. The joints of this lever o, with its connecting and supporting parts are made sufficiently loose to permit it to move endwise to bring the platen against the type wheel.

p designates a cord or its equivalent of which one end is attached to an eye in the upright piece h^3 and the other end attached to, and wound upon a barrel q or its equivalent.

p' designates another cord of which one end is attached to an eye in the upright piece h^4, and the other end attached to, and wound upon the barrel q or its equivalent a little above or below cord p, so that when the barrel q is rotated one way cord p is wound upon said barrel, and cord p' is wound off and the paper carriage moves toward the right, and when said barrel is rotated in the opposite direction cord p' is wound upon the barrel, cord p is wound off and the paper carriage moved toward the left.

The barrel q is journaled in the bottom housing A^2 A^3, and lower support A^{11}; upon the upper side of said barrel is a ratchet crown wheel or its equivalent. A pawl q' is pivoted to the lever or rod o so that when rod o is drawn forward by depressing any one of the key levers, the pawl q' slides over the teeth of said ratchet crown wheel, and when the key lever is released and rod o pressed toward the paper carriage by lever o^3 and spring o^4, the pawl q' catches into the teeth of said ratchet crown wheel, and rotates barrel q winds up cord p' and off cord p and moves the paper carriage one space toward the left.

q^2, q^2, &c., designate holes into which the pin attached to the lower side of projection q^3 may be put to change the position of the projection q^3, to write lines of a less or greater length as desired; when the end of a line is reached projection q^3 is under the pawl q', and begins to raise the same as a key lever is depressed, and rod o drawn toward the front, and pawl q' over the projection q^3. As the pawl q' is raised a hook q^4 on its upper side is arrested against a sector arm q^5 which is then drawn forward the sector of a gear wheel q^6 rotated, also the pinion q^7 attached to the axle of the barrel q, thus rotating barrel q, winding upon said barrel cord p and winding off p' and moving the paper carriage toward the right or beginning of the next line; the sector of a gear wheel q^6 is pivoted to the lower side of the lower housing A^{11} by a pivot q^8.

r is a rod attached at one end to the radius q^5 and the other end to the lever r^2 which is pivoted to the bottom housing A′ at r', and extends upwardly leaning a little toward the front, and at its upper end bent forward extending through the slot r^3 in the side A^9, and has attached to its upper end a finger piece or key r^4; the object of the rod r, and lever r^2 is to move the carriage toward the right, or left by pressing key r^4 down toward the front, or raising key r^4 toward the back, or paper carriage; the rod r and lever r^2 are especially convenient for moving the paper carriage toward the right or beginning of a line, when the last line of a paragraph, or any line which ends before the vertical line has been reached in which all the other lines end.

s s', s^3 s^4, &c., designate key levers of which the front ends s', s^4, &c., all end in a straight line parallel to the front and bottom sides of the housing; the key levers are fulcrumed in a line, or on a rod u u' parallel to the bottom housing, but not to the side A^9 or line in which the front ends of the key levers end; the key levers extend beyond their respective points of fulcrum, and are weighted at their farther ends to a rise, and rest against the upper ends of slots B, B′, &c., the ends of the key levers extending toward the front from their points of fulcrum, so that when any key is depressed the others will not be affected.

t designates a rocking frame or bail pivoted at its opposite ends to the housing; the upper edge of this rocking frame rests against, or nearly against the lower sides of the key levers parallel to the line in which the key levers end in front, said rocking frame being quite near to the bar u u' at one end so that when a key lever at the right hand side of the key board is depressed it will not depress toward the front the rocking frame as far as a key lever farther to the left, and no two key levers will depress the rocking frame forward the same distance. The front ends of the key levers are all depressed the same distance, and are all arrested by a cross bar parallel to the bottom housing, but slanting a little toward the back or paper carriage as said bar approaches the right side of the ma-

chine, or the front ends of said levers may be arrested by the bottom housing A′, to facilitate alignment or to rotate the type-wheel to its exact position.

v designates another rocking frame or bail arranged in the same manner as the rocking frame t only more to the front and not quite parallel to the rocking frame t the right-hand end being a little farther from the front than the adjacent end of the frame t because when a key lever at the end v^2 is depressed its front end will be farther from the front end of the housing A′ than the end of a lever at the left or near the left hand end since the levers are fulcrumed a greater distance from the front than the levers near the other end; the frame v is always depressed toward the front the same distance no matter by what key lever it is depressed.

The finger pieces s^5, &c., are raised a little above the levers to which they are attached so that when one of the levers is depressed, the finger piece of the lever which is being depressed, or the finger of the operator will not affect the neighboring keys, or key levers; the second row of finger pieces is a little higher than the first row so as to avoid affecting the neighboring levers, and the keys in the row before it.

For spacing as between words, indenting paragraphs, &c., there is a blank or space key 5 preferably near the middle of the key board but may be nearer to the sides, or at the sides, said space lever being fulcrumed and arranged as any other key for printing letters or characters except that when said space lever is depressed there is rotated to position a space upon the type wheel and as the platen and paper are propelled against the type wheel no impression is made; a space may be left in each of the different rows or banks of type. The spaces in the different rows or banks of type should all be in a vertical line above one another, also should the letters or characters upon the type wheel be above one another in vertical lines.

In my type writing machine the type wheels, sectors, or cylinders are removable from the shaft a', by means of a connecting screw 6 and others having different styles of letters may be substituted for them at will. As will be seen the screw is partly in the type wheel and partly in the shaft thereof, whereby the wheel is locked upon the shaft against vertical movement as well as horizontal rotation, and the screw will not jar loose, thus making a simple means for quickly and readily removing a wheel, and placing another in its stead.

To provide for substituting different styles of letters or characters upon the key levers s' s^4, &c., the finger pieces s^2, s^5, &c., contain on their lower sides a concave or female screw, and the upright pieces s^8, s^9, or finger piece supports have screws cut on their upper ends, so that finger pieces representing a different style of letters may be readily turned on to the finger piece supports.

The operation of my invention is as follows: Upon depressing any one of the key levers the bars t' t^2, v' v^2 of the rocking frame t t' t^2 t^3, and v v' v^3 v^3 are depressed toward the front, bar t' t^2 presses down the end g^2 of the bell crank g g' g^2, draws forward end g, rod g^3, lever c^4, toggle joint c^3, and presses apart or away from the type wheel the ink pad segments, which being accomplished the bar t' t^2 is arrested by the bottom of the oblong hole in the front end of rod f, rod f is drawn toward the front also the gear wheel sector e, which rotates pinion a^4, shaft a', type wheel a, and a letter or character is brought to position for printing, at the same time rod v' v^2 is pressed down toward the front, rod o drawn forward, also rod h^{10} of the paper carriage, and the roller or platen h propelled with the paper or object to receive the printing against the type shield b, and against a type face protruding through hole b' in said type shield; as the key lever is released it is raised against the upper end of the slot in A^9 through which the key lever passes, and by which the key-lever is guided, by the weight attached to the lever beyond the point to which the lever is fulcrumed, the double crank is raised to its original position and the ink pad segments are pressed together or against the type wheel by the spring c^2 through lever c^4, rod g^3, and bell crank g g' g^2, and the springs e^2, and a^3 which rotate to their original position the shaft a', type wheel a, pinion a^4 gear wheel sector e^3, and draws up against or nearly against the lower sides of the key levers the rod t' t^2 by rod f; the rocking frame v v' v^2 v^3 is drawn to its original position by spring o^4, crank, or lever o^3, and rod o, which also propels the roller or platen by the rod h^{10} away from the type wheel, the type shield falling away by its own weight from the type wheel, and pawl q' catches into a tooth of the ratchet crown wheel rotates the barrel q, winds upon the same cord p', off cord p, and moves the paper carriage the space of a letter or character toward the left. When the paper carriage gets to within a certain number of spaces from the end of the line, hammer u' strikes a bell as the platen or roller is propelled forward against the type wheel, and if there will not be space enough in the line for the whole word the operator will be given an opportunity to break the word correctly. When the end of the line is reached the projection q^3 will be underneath the pawl q', and as the operator depresses another key with the intention of printing the letter or character or making a space the type wheel, &c., is driven as usual, but rod o draws forward over the projection q^3 pawl q', and raises the same. The hook q^4 of said pawl is then arrested by the arm q^5, sector q^6 rotates pinion q^7, and barrel q upon which is wound cord p and unwound cord p', and the paper carriage moved

toward the right or beginning of the next line, and as the paper carriage moves toward the right the lower end of lever k^2 is arrested and pressed back by the projection l, and the feed roll h rotated through the ratchet k and pawl k^3 which is jointed to the upper end of the lever k^2, and as soon as the paper carriage gets to the beginning of the next line the paper is raised to receive said next line in its proper place, the letter or character will be opposite the hole b' in the type shield and the paper or object to receive the printing will be pressed against the type shield, and character by the platen or roller. To shift to position a row or bank of type it is only necessary to depress the finger piece or forward end d^5 of the bell crank d^3 d^4 d^5 which draws forward the end d^3, rod d^6, lever e^7, toggle joint c^3, and presses apart or away from the type wheel the ink pad segments. When this is accomplished the arm d^5 is arrested by the front end of lever d, which is then depressed and type wheel shaft and type wheel shifted vertically by collar a^5, and as soon as the desired row or bank of type comes into position the lever d is arrested by the step designed for that row or bank of type, and the projection d^2 is pushed into a small niche or groove which holds in position the desired row or bank of type, and as d^5 is released the pad segments are pressed together or against the type wheel by the spring c^2, toggle c^3 is pushed back or together, lever c^7 drawn back, also rod d^6, and end d^3 of bell crank d^3 d^4 d^5, and end d^5 raised. To move the paper carriage to the right or beginning of a line when the last line of a paragraph, or any line which ends before the vertical line has been reached in which all the other lines end, or to move the paper carriage toward the right or left without affecting the type wheel, or propel the roller or platen against the type wheel, and without affecting the parts which drive the type wheel, ink pad, or propel the carriage to and from the type wheel, the finger piece r^4 is pressed up toward the paper carriage, rod or lever r, and radius q^5 also in that direction, and the pinion q^7 and barrel q are rotated by the gear wheel sector q^6, and cord p' is wound on the barrel q, and p off, and paper carriage moved toward the left; or if the finger piece r^4 is depressed toward the front rod r, radius q^5 are drawn forward, q^7 and q rotated by the gear wheel sector q^6, cord p is wound on the barrel q, cord p' off, and the paper carriage is moved toward the right.

As the construction and arrangement of the novel features of my invention may be variously modified without departing from the spirit of the same, I do not limit myself to the exact device described, and shown in the specification and drawings. Certain features of my invention are applicable to other classes of type writing machines than wheel, sector, or cylinder machines. I therefore do not confine my invention to a use of the same in connection with type wheel, sector, or cylinder machines, but reserve the right to embody the same in type writing machines generally, and in which said modes of operation may be embodied.

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

1. A type writing machine comprising a type wheel support, a vertically shifting type wheel shaft journaled therein and projecting below the support, a type wheel upon the upper end of said shaft, the shaft having at its lower end a rigid head and a spiral spring placed between the said head and support and having its ends connected respectively to said head and support, the parts combined to operate as described.

2. In a type writing machine comprising a printing mechanism including a rotating type wheel and a platen, combined with a vibrating shield pivotally supported between and out of contact with the said wheel and platen and having an opening through which the impression is made.

3. In a type writing machine a type wheel combined with an inking pad composed of semi-circular portions which completely surround the said wheel, each portion being movable, and a means for opening and closing the cylinder formed thereby.

4. In a type writing machine, a type wheel combined with an inking pad, composed of two or more pivoted parts engaging the said type wheel, toggle joint connected to the parts of the pad, and a means for operating the toggle joint to open the pad.

5. In a type writing machine the combination of a type wheel, an inking pad composed of two or more movable parts, a toggle joint connected with the parts of the pad, and a lever engaging the toggle joint, all operating as described.

6. In a type writing machine the combination of a type wheel, an inking pad composed of two or more movable parts, a toggle joint connected with the pad and having a knee, and a lever which engages the knee for operating the toggle joint and thereby the parts of the pad.

7. In a type writing machine, the combination of a printing mechanism including a vertically shifting type wheel and key levers, an inking pad for the type wheel composed of two or more connected movable parts, a shift lever, a bell crank lever pivoted upon the shift lever, a connection between the bell crank lever and the pad, and a connection between the key levers and the pad, all combined to operate as described.

8. In a type writing machine, a shift lever having a vertical and lateral movement at its outer end and a lateral projection combined with a guide having a vertical slot for the lever and lateral recesses for the said projection, substantially as specified.

9. In a type writing machine the combina-

tion of a vertically shifting type wheel, an inking pad composed of two or more connected movable parts, a shift lever for the type wheel, a bell crank lever upon the said lever, and an operating connection between the bell crank lever and the pad.

10. In a type writing machine, the combination of a rotating type wheel, a sector for rotating it, a rocking frame, a rod connecting the said frame and sector, and inking pad made in segments which are movable in relation to the type wheel, a bell crank lever pivoted upon said connecting rod having one end engaged by the rocking frame and the opposite end connected with the inking pad segments, substantially as specified.

11. In a type writing machine, the combination of a rotating type wheel, a sector for rotating it, a rocking frame, a rod connecting the sector and frame, a segmental inking pad, a bell crank lever upon said rod, one end of the bell crank lever resting under the frame and the opposite end connected with the inking pad, for moving its segments, the adjacent end of the connecting rod being below the rocking frame, whereby the bell crank lever is operated first for moving pad from the wheel, and then the wheel rotated.

12. The combination in a type writing machine, of a scale bar and a spring clasp having two arms which normally spring together to be applied to an ordinary scale bar.

13. The combination in a type writing machine, of a scale bar and a spring clasp having two arms normally held together, each arm having an operating projection extending past the opposite arm to be operated, as described.

14. In a type writing machine the combination of a carriage, a rotating platen therein carrying a ratchet wheel, a lever pivoted to the carriage between its ends at right angles to the journal of the said platen, whereby it swings in a line with the direction of travel of the carriage, a pawl carried by one end of the lever for engaging the platen ratchet wheel, and a stop for engaging the opposite end of the said lever, for operating it and turning the said platen.

15. In a type writing machine the combination of a carriage, a rotating platen therein carrying a ratchet wheel, a lever pivoted to the carriage between its ends at right angles to the journal of the platen, one end of the lever carrying a pawl engaging said platen ratchet wheel, the opposite end of the lever bent from the end of the carriage described, and a stop with which said bent end of the lever engages for operating the lever and turning the platen.

16. In a type writing machine the combination of a carriage, the key levers, a mechanism operated by the key levers for moving the carriage in one direction as impressions are made, and a mechanism operated by and common to all the key levers which moves the said carriage operating mechanism in the opposite direction when the carriage has reached the end of a line by the depression of any one of the key levers.

17. In a type writing machine, a type wheel, a carriage, a feed mechanism for moving the carriage, a single rod for operating the said feed mechanism, and for moving the carriage toward and from the type wheel, a movable frame to which the said rod is connected and key levers, all of which operate the said moving frame whereby a depression of a key feeds the carriage longitudinally, and moves it for an impression.

18. In a type writing machine the combination with a carriage, of a barrel carrying a ratchet wheel, cords attached to opposite ends of the carriage and wound upon the barrel in opposite directions, a printing mechanism, a reciprocating rod carrying a pawl for turning said barrel ratchet wheel in one direction, a pinion for turning the ratchet wheel in the opposite direction, a sector engaging said pinion, a projection on said ratchet wheel for raising the pawl and a shoulder upon the pawl which engages the sector when raised, the parts combined to operate for the purpose described.

19. In a type writing machine the combination of a carriage, a barrel for moving it in opposite directions, a mechanism for moving the barrel in one direction space at a time, and a mechanism for moving the barrel in the opposite direction, the last said mechanism including an adjustable device for bringing into action the said mechanism, combined with key levers for operating both mechanisms, all operating for the purpose described.

20. In a type writing machine the combination with a carriage, of a barrel for moving it opposite longitudinal directions, a printing mechanism, a mechanism operated thereby for turning said barrel in one direction space at a time, a pinion for turning said barrel in both directions, a sector engaging said pinion, and a key lever for operating the sector in both directions thus moving the carriage in either longitudinal direction desired thereby.

21. In a type writing machine the combination of a carriage having a longitudinal movement and pivoted to have a transverse movement to make an impression a printing mechanism including a type wheel and key levers for operating them, a rocking frame common to all the key levers, a rod connecting the carriage and the rocking frame, a barrel for moving the carriage longitudinally and a pawl upon the said rod for engaging the barrel to propel it and thereby the carriage.

22. In a type writing machine the combination of a printing mechanism including a type wheel, key levers, a frame common to all the key levers, the said key levers being each pivoted a different distance from said frame whereby the frame is moved varying distances by the depression of each key lever.

23. In a type writing machine the combination of a printing mechanism including a type wheel, key levers, a frame connected to all the key levers, and a fulcrum rod for the key levers which extends in a line diagonal to the said frame, whereby the frame is depressed varying distances by the key levers for the purpose described.

24. In a type writing machine the combination of a carriage mounted to have a transverse movement to make an impression a series of pivoted key levers, a stop for each of said levers in the same plane, a rocking frame common to all of said key levers and near their ends, whereby the depression of each lever depresses the frame the same distance and a connection between said frame and the carriage.

25. In a type writing machine the combination of a longitudinally moving carriage having a longitudinal bar, loops within which the said bar moves, and wheels journaled in said loops below the doubled portion thereof, and upon which wheels the said bar rests and travels.

26. In a type writing machine the combination of a carriage having a longitudinal movement and provided with a longitudinal bar, wheels upon which said bar rests and moves, and a loop extending over said bar for holding it in place upon the wheels.

27. In a type writing machine the combination of a type wheel or sector, an inking pad composed of movable sections, a spring for normally holding said pad, in contact with the type wheel or sector, a toggle joint connected with said pad sections and a lever connected with the toggle joint for moving it and thereby the pad sections for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HENRY BARTEN.

Witnesses:

FRANCIS B. PALMER,

FRANKLIN N. JEWETT.