(No Model.)

C. W. COREY.

LINE SPACING DEVICE FOR TYPE WRITING MACHINES.

No. 523,623. Patented July 24, 1894.

Fig. 1.

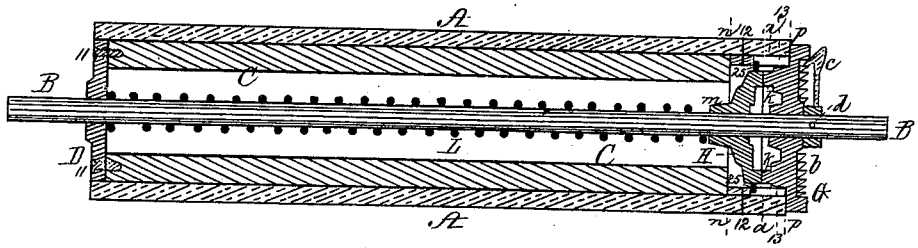


Fig. 2.

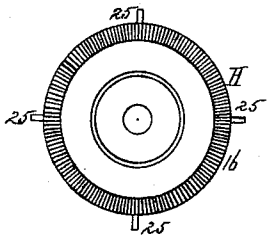


Fig. 3.

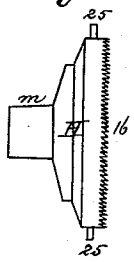


Fig. 4.

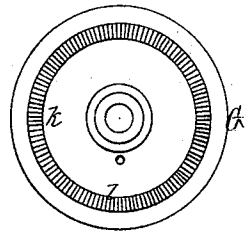


Fig. 5.

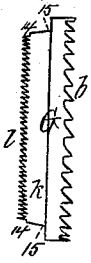


Fig. 6.

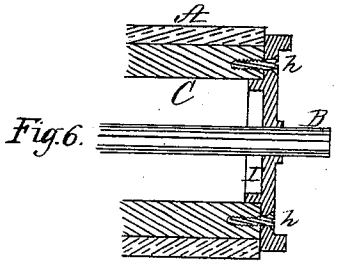


Fig. 7.

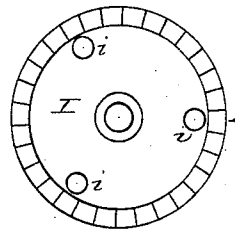


Fig. 8.

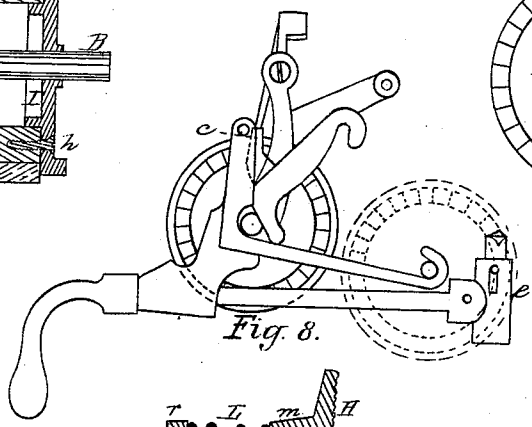


Fig. 9.

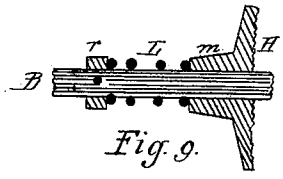
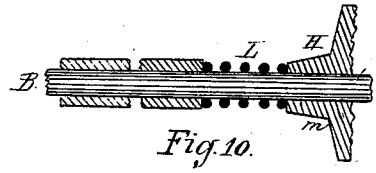


Fig. 10.



Witnesses,
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E. S. Stearns.

Inventor,
Charles W. Corey,
per A. W. Stearns,
Atty.

UNITED STATES PATENT OFFICE.

CHARLES W. COREY, OF MIDDLEBOROUGH, MASSACHUSETTS.

LINE-SPACING DEVICE FOR TYPE-WRITING MACHINES.

SPECIFICATION forming part of Letters Patent No. 523,623, dated July 24, 1894.

Application filed October 14, 1893. Serial No. 488,134. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. COREY, of Middleborough, in the county of Plymouth and State of Massachusetts, have invented certain Improvements in Line-Spacing Devices for Type-Writers, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a central longitudinal section through the platen of a type-writing machine with some of the parts immediately connected therewith of the old construction and with my improvements applied thereto; Fig. 2 a front elevation of my auxiliary line spacing wheel having finely graduated teeth for spacing minute distances; Fig. 3 a side elevation of the same. Figs. 4 and 5 represent the ordinary ratchet feed wheel now employed for the common line spacing with its back provided with finely graduated teeth for spacing minute distances in accordance with my invention. Figs. 6 and 7 represent the present construction of the ratchet feed wheel for ordinary spacing and the present way of securing it to the platen; Fig. 8 an elevation of the platen, the ordinary line spacing ratchet, its actuating dog and retaining pawl; Figs. 9 and 10 modifications to be referred to.

My present invention has exclusive reference to the line spacing mechanism of type-writing instruments, &c., and while retaining the well known devices for ordinary spacing, this invention has for its object to rotate the platen through minute distances and consequently feed the paper through small, uniform or irregular, spaces, and thereby admit of printing on lines having equal or unequal intervals between them, and without the necessity of locating and adjusting the paper by hand;—the capacity for accomplishing said result being particularly appreciated in filling out blank forms where irregularity of spaces exists between the lines; and this invention consists firstly in an auxiliary wheel having finely graduated teeth and located on the platen shaft within the platen, in combination with the ordinary ratchet feed wheel having correspondingly graduated teeth at its back, and with which said auxiliary wheel engages, thus enabling the desired style of spacing to be produced; and this invention also consists in certain details of construction herein fully described and specifically claimed.

Referring to the said drawings, A represents an ordinary cylindrical platen of rubber upon which the paper bears while receiving the impressions of the type.

B is the ordinary platen shaft fitting loosely within the platen and intended to be located horizontally in bearings (not shown) in a well known manner.

C is a hollow wooden cylinder forming a support for the interior of the rubber platen, one end of which is closed by the usual annular head D screwed at 11 thereto, while the interior of the wooden cylinder at its opposite end is cut away from *n* to *p* for the reception of a thin cylindrical metal shell *a*, the outer end of which lies flush with the corresponding end of the platen, said shell being secured thereto by rivets 12, and being provided with longitudinal slits or openings 13 for a purpose presently to be explained.

G is a wheel mounted loosely on the shaft B and provided on the edge of its outer face with the ordinary ratchet teeth *b* with which engages the ordinary spring retaining pawl *c*, the hub of which is secured by a pin *d* to the shaft B, this hub also keeping the wheel G in place on the shaft.

The construction thus far described, of the wheel G is similar to the ordinary ratchet wheel I seen in Figs. 6 and 7, as the feed of the platen and the paper and the usual spacing of the lines may be effected as heretofore when the actuating dog *c* is pressed against the teeth of said wheel on the completion of the transit of the carriage to the end of a line. This old form of wheel was formerly secured to the end of the wooden support C of the platen by screws *h* Fig. 6 passing through the holes *i* Fig. 7, and thus said wheel when partially rotated, necessarily communicated its motion to the platen to feed the paper. It will thus be seen that although I retain the ratchet wheel G and its feed operating devices, I do not secure said wheel to the end of the platen support as heretofore, and I make the following change in its construction, viz: I provide

its back with an annular projection *k* and cut thereon fine teeth or serrations *l*, a shoulder 14 being formed immediately at the rear of the ratchet teeth to admit of the surface of the wheel abutting against the end of the platen, while the diameter of the projection *k* at 15 corresponds with the inner diameter of the shell, and affords a rest therefor, said projection being slightly tapered in cross section Fig. 1 to prevent binding.

H is an auxiliary wheel having an extended hub *m* at its back and mounted on the shaft B—said wheel being free to move longitudinally thereon. The diameter of this wheel is but a trifle less than the inside of the metal shell *a* in order to avoid friction thereon in moving longitudinally therein. The outer peripheral surface of the wheel H is provided with projections 25 which fit into the slits or openings 13 of the metal shell *a* Fig. 1, by which construction when the wheel H is rotated the platen must revolve in common therewith—said wheel being free to slide on the shaft in the following manner and for the following purpose.

The outer periphery of the front face of the wheel H terminates in an annular projection whereon are cut fine teeth or serrations 16 similar to those *l* on the back of the ratchet feed wheel G, the two series of teeth or serrations meshing snugly together and those 16 of the wheel H (secured to the platen) being constantly pressed and kept in gear with those *l* of the ratchet wheel G by a spiral spring L which surrounds the platen shaft B and is interposed (when compressed) between the head D and the back of the auxiliary wheel H.

From the foregoing construction, it will be understood, that owing to the wheel H being secured within the platen, the latter may be rotated very small arcs of circles and the paper fed through spaces of any desired, predetermined degree of fineness by rotating the wheel H a distance equivalent to that moved by one or more of its teeth, without simultaneously rotating the ordinary ratchet feed wheel G, as a slight pressure of the hand on the platen away from the operator *i. e.* in the direction in which the said wheel G revolves will suffice to overcome the resistance of the spiral spring L and the friction of the teeth 16 on the teeth *l*, thus enabling the former to slip by the latter without revolving the ordinary ratchet teeth G, by which the usual line spacing is effected. It is however obvious, that should the wide spacing be required instead of the fine spacing provided for by my invention, owing to the meshing of the finely graduated teeth *l* 16 with each other, the rotation of the ratchet wheel G (through its usual connections with the hand lever and actuating dog) must as positively rotate the platen and feed the paper the required wide space as though said ratchet wheel was screwed immovably to the end of the platen support C, as heretofore (see Fig. 6).

Instead of feeding the paper forward the ordinary space to print on lines in advance, if it be desired to carry the paper back to insert matter omitted between two consecutive lines previously printed on, it is simply necessary to release the ratchet wheel G from its retaining pawl and turn the platen back a distance equal to one ratchet tooth and then feed forward the required distance by applying the hand to the platen as heretofore.

In filling out blank forms where irregularity of space occurs between the lines, it is only necessary to turn the platen by hand till one or more teeth 16 of the wheel H slip by the teeth *l* at the back of the ratchet wheel G.

Instead of employing a spiral spring L of a length extending between the hub of the wheel H and the head D of the platen as shown in Fig. 1, I may secure a boss or stop *r* on the shaft near the hub of the wheel H and interpose a short spiral or other form of spring between them, or a tube may be slipped on the shaft and a spring interposed between it and the wheel H, see Figs. 9 and 10.

My improved mechanism is concealed from sight, protected from dust, reliable in its operation and so simple that it may be applied to type-writing instruments now in use with but a trifling change in their original construction, and without any change in their outward appearance. Each of my finely graduated teeth *l* 16 is of the ratchet form, as it will slip by its opposite tooth when turned in one direction and becomes a locking device when turned in the opposite direction.

The inside of the head D at the left of the platen may be provided with my finely graduated teeth *l* and the auxiliary wheel H with corresponding fine teeth may engage therewith; the ordinary line spacing ratchet G retaining its old position at the right of the platen, but in such case, the platen would have to be revolved toward the operator to effect the minute line spacing; I therefore prefer the construction herein first described.

I claim—

1. In a type-writing machine, the combination of the platen A—the shaft B—the ratchet wheel G having finely graduated teeth *l* arranged in an annular direction upon its back, and the auxiliary wheel H provided with similarly graduated teeth 16 arranged annularly upon its face, the teeth of one wheel being moved into contact with and meshing into the teeth of the other wheel, substantially as described.

2. In a type-writing machine—the platen A, its shaft B and the ordinary line spacing wheel G having in addition to its usual ratchet teeth *b*, an annular series of finely graduated teeth *l* at its back, in combination with the auxiliary wheel H having similarly graduated teeth 16 arranged annularly upon its face and a spring for moving the teeth 16 into contact with the teeth *l*, operating substantially as specified.

3. In combination—the platen A—its shaft B—and platen support C recessed out at one end—a metal shell *a* located within it and provided with slits 13—an auxiliary wheel H having peripheral projections 25 fitting into said slits and with finely graduated teeth 16—a spring L and a wheel G having the ordinary ratchet teeth *b* and a series of finely graduated teeth *l* constructed to operate substantially as set forth.

Witness my hand this 12th day of October, 1893.

CHARLES W. COREY.

In presence of—
THOMAS C. COLLINS,
N. W. STEARNS.