C. L. SHOLES, C. GLIDDEN & S. W. SOULÉ.

TYPE WRITING MACHINE.

No. 79,868. Patented July 14, 1868.

Fig. 1.

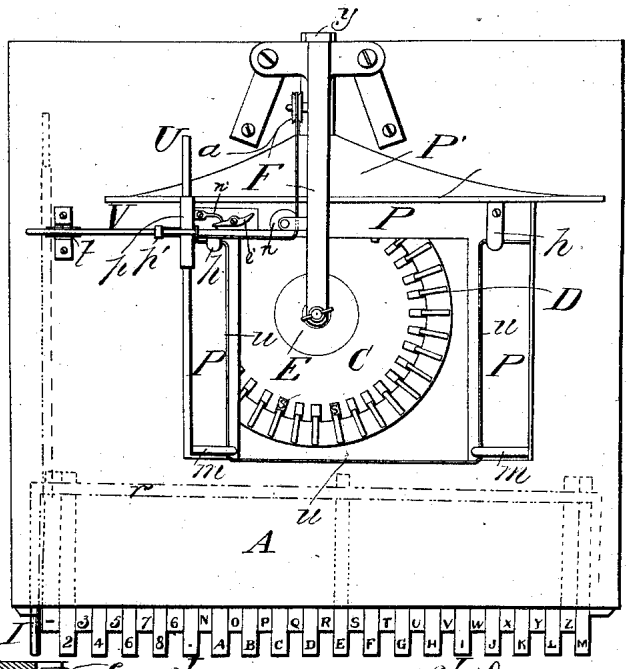


Fig. 3.

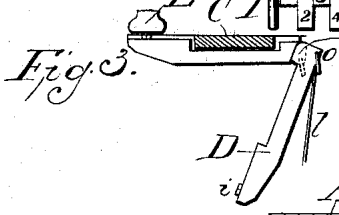


Fig. 2.

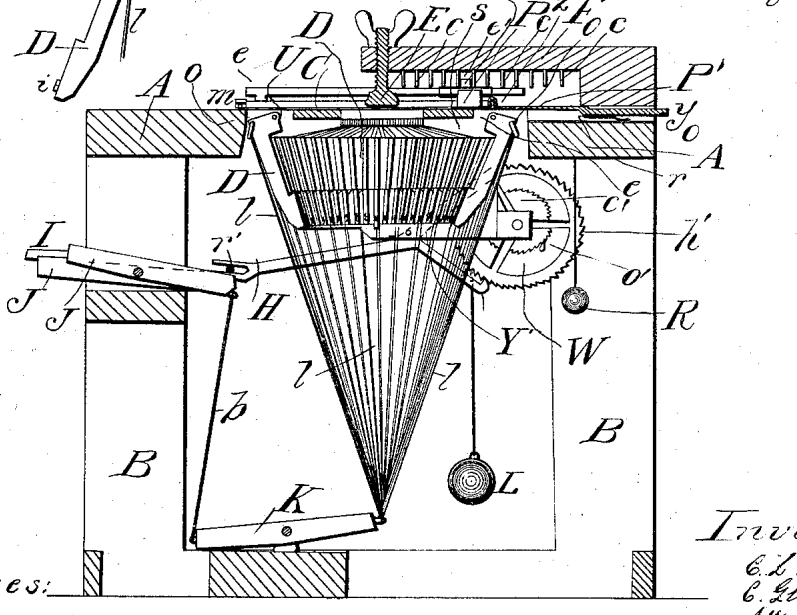
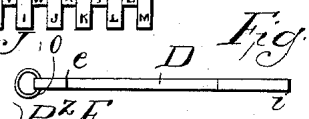


Fig. 4.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN TYPE-WRITING MACHINES.

Specification forming part of Letters Patent No. **79,868**, dated July 14, 1868.

To all whom it may concern:

Be it known that we, C. L. SHOLES, CARLOS GLIDDEN, and S. W. SOULÉ, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Machines for Writing or Printing Correspondence; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification and to the letters of reference marked thereon, like letters indicating like parts wherever they occur.

To enable others skilled in the art to construct and use our invention, we will proceed to describe it.

Our invention relates to that class of machines designed to write with types instead of a pen; and the nature and principal features of our improvements consist of a circular annular disk, provided with slots and grooves to hold and guide the type-bars; a concentric groove around the periphery of the disk, to hold, support, and guide the pivots of the type-bars; the combination of a slotted circular disk with type-bars fitted and pivoted thereto; the combination of rods, levers, and keys for working the type-bars; a carriage combined and provided with a pivoted pawl, arm, and pins, and attachments to move the paper vertically and laterally, and the combination of a rod and clamps to hold the paper fast to the carriage.

In the drawings, Figure 1 represents a top view of our machine; Fig. 2, a transverse vertical view of a section thereof, taken through the middle on the line *x x* of Fig. 1; and Figs. 3 and 4, a view of detached parts thereof.

Of any hard, tough material (we prefer and use brass) make and turn a disk, C, four to five inches in diameter, more or less, according to the length and number of the type-bars to be used, and one-half to three-fourths of an inch thick, or more, at the periphery or outer edge, according to the width of the type-bars. Through the center of the disk bore a hole one to one and a half inch in diameter, as desired, to let the top or raised sides of the inner ends of the type-bars strike through against the paper and platen when in use. Plane the top side of the disk smooth and level, and bevel the bottom side from the periphery to the circumference of the hole in the middle, or from the outer to the inner edge, to a thickness of two-eighths to three-eighths of an inch, as preferred. Through the outer edge of the disk, from side to side, and one-half to three-fourths of an inch deep, or in toward the center, cut a series of slots, S, as many as the letters or characters to be used in writing. In the bottom side of the disk cut a series of radial slots or grooves, S, in a line directly from the central point exactly to meet and fit in with the slots in the edge, as many radial grooves as characters to be used in writing, or as slots in the edge. In and around the outer edge or periphery cut or turn a groove or slot, to receive and hold the pivot-wire on which to pivot and suspend the type-bars.

Make as many type-bars or hammers D as radial grooves in the disk, or characters to be used in writing, of any suitable substance, (we prefer and use steel,) exactly to fit and work readily and smoothly in the radial grooves and slots, and pivot the outer ends into the slots by a wire, *e*, running around in the groove or slot circumscribing the periphery, and through pivot-holes bored in the ends thereof, one wire serving to pivot all the type-bars, so that when not striking they will hang down. On the top sides of the inner ends of the type-bars cut or stamp raised types *i*, the types to be at such angles to the type-bars that the perpendicular lines of the letters made by the types will be parallel, and the bottom horizontal lines of all the letters will be on one and the same line, and so of the top horizontal lines.

The edge slots in the periphery of the disk are not vitally essential to its value, though preferable and adding to it.

In the middle, or as nearly as desired, of any table, A, of suitable size and material, mounted on any practicable and convenient frame or stand, B, cut out a circle large enough to receive the disk. Fasten the disk in the circle by any convenient way so as not to interfere with the free working of the type-bars and rods and levers. Over the central point, in the circle of the disk, hang a platen or block, E, by any practicable means which will old

it firmly and solidly in place for the type-bars to strike against. We use an arm, F, attached to the side of the table. Hang the platen as near the surface of the disk as will just admit the free sliding of the paper to be written on between it and the disk. In the lower part of the frame B place a series of levers, K, one more than as many as there are type-bars. Along the front side of the table arrange a series of keys, I, one more than the number of type-bars, similar to the keys of a piano or melodeon. Attach the inner end of each of the keys, except one, by a rod or wire, *b*, to one end of each of the levers K. Attach the other end of each of the levers to each of the type-bars by a wire or rod, *l*. So arrange the keys and levers and rods, and connect them with the type-bars in the peculiar manner represented in the drawings in Figs. 1 and 2, that when a key is struck it will throw the corresponding type up against the platen, the type-bar instantly falling back to its suspended position, till the key is struck or pressed again.

By placing white paper over the disk and under the platen, and an inked ribbon or carbonized or manifold paper between the white paper and the platen, and striking the type up against the paper and platen, the letter will be printed on the top side of the white paper.

On the top of the table put a carriage of two parts, P and P′. To P′ attach an arm, *y*, to project back and fit in a groove in the rear part of the arm F, and then fix a spring, *r*, to press against it, to keep it from moving accidentally. In the under surface of the front edge of the plate P′ cut a groove, and into which loosely fit the turned-up edge of the plate P, as shown in Figs. 1 and 2, to form a guide to cause the plate P to move in a straight line, and always keep it connected with the plate P′, so that when the latter is moved to or from the front of the table, the latter will be moved with it. Attach to the arm F one end of a rod, V, and attach the other end to the table A. On this rod mount a sliding guide, *p′*. Connect this latter to the part P by a tube, *p*, fitting on the rod U, and fasten the latter to P.

Under the rod V place a pulley, *t*, and under the table fasten the drum W, around which to wind a cord passing over the pulley, and operate the drum by a weight, L, as shown in Fig. 2. On the same shaft with the drum mount an escape-wheel, *h′*, with a ratchet-wheel, *c′*, attached, and connected by a pawl, *o′*. To an arm, Y, pivot an escape-lever, H, having two pawls, G, arranged to engage with the escapement-wheel W, to regulate the movement of the drum when operated by the weight L, and thereby the movement of the paper-carriage P. Slot the rear end of the detent H, and engage it with a rod or bar, *r′*, resting on the inner ends of the keys J, one end extending to the front of the table, alongside of the keys, and terminating in a handle or key, I, as shown in Figs. 1 and 2. As this rod rests over and on all the keys, as shown by the dotted line in Fig. 1, whenever a key is struck the detent H will be worked, and the wheel *h′*, with the drum W, will be allowed to move the extent of one tooth, and will move the paper-carriage the width of one letter. The handle or key I, being the extra key, or key without the corresponding type, striking it, will move the paper the width of a letter without striking a type, and give the proper space between words. Attach a cord to the weight R, at one end, to the guide *p′*, as shown in Fig. 1, pass it around the pulley *n*, thence along the arm F, and down over another pulley, *a*, to prevent the paper-carriage from moving accidentally or too far. On the under side of the arm F, at equal and uniform distances—each distance or space the desired width from line to line in writing—arrange a series of pins, *c*, as shown in Fig. 2. On the carriage P pivot the pawl *e′*, as shown in Fig. 1, with the front end curved, and attach a spring, *n′*, to press the back end against a pin or stop.

After the carriage has been moved forward, in writing a line or otherwise, in being moved back to the place of beginning the convex side of the curved end of the pawl *e′* strikes the back side of one of the pins *c*, and thereby moves the carriage P, with the part P′, toward the back side of the table, or at a right angle to the line of writing, the distance from pin to pin, or the width of a line, the spring *n′* permitting the pawl *e′* to yield as it hits against the succeeding pin *c*, as the carriage is moved forward again, and the arm *y* of the plate P working in a groove or otherwise, to guide the plate P′ and the whole carriage. Attach to the carriage P the clamp *u*, large enough to go round the margin of the paper to be used to write on, as shown in Fig. 1. Fasten one end or side of the clamp to the carriage with hinges *h*, and the other end with catches or buttons *m* to slip over.

To work the machine in the process of writing, first lay down on the carriage the paper to be written on. Over this lay a sheet of carbonized paper or inked ribbon or cloth, and bring down the clamp *u* to hold them securely to the carriage. Then strike the keys in the order of the letters to spell the words to be written, using the handle or key I to separate the words by proper spaces. Whatever key is struck, the corresponding letter or character will be printed on the upper side of the paper, and as each letter is printed, the paper is moved forward by the action described, ready for the next letter or proper space.

Thus made, the type-writing machine is simple, compact, and reliable, and entirely feasible, and practicably adapted to the purpose intended, which is writing ordinary communications with printing-types instead of a pen; and

What we claim as new and useful in our invention is as follows:

1. A circular annular disk, C, with radial grooves and slots, or grooves alone, to receive and guide the type-bars or hammers, so that they inevitably and necessarily will strike the central point with perfect accuracy, when made and operated for the purpose and as described.

2. The combination of a circular annular radially slotted or grooved disk with type-bars fitted therein and pivoted thereto, when made and operated for the purpose and as described.

3. The combination of a ratchet of regular equidistant teeth or cogs with rods and levers to the keys, so that the paper-carriage will be moved a certain and exact distance every time a key is struck, when made and operated for the purpose and as described.

4. The clamp or rod *u*, in combination with the hinges *h* and the catches or buttons *m*, for holding the paper securely down on the carriage, when made and operated for the purpose and as described.

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