C. L. SHOLES & C. GLIDDEN.

Type-Writing Machine.

No. 200,351. Patented Feb. 12, 1878.

Fig. 1,

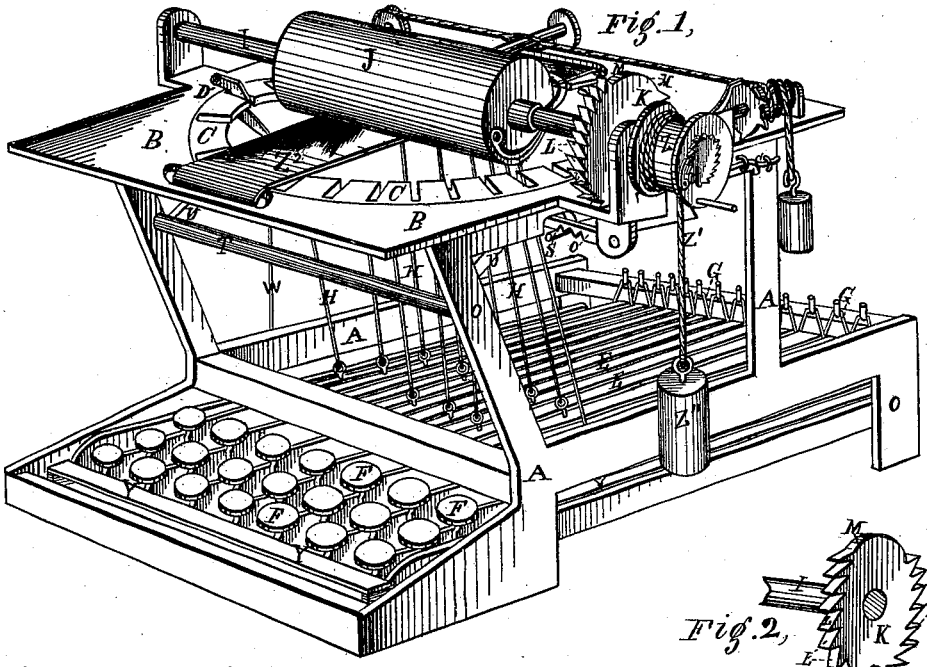


Fig. 2,

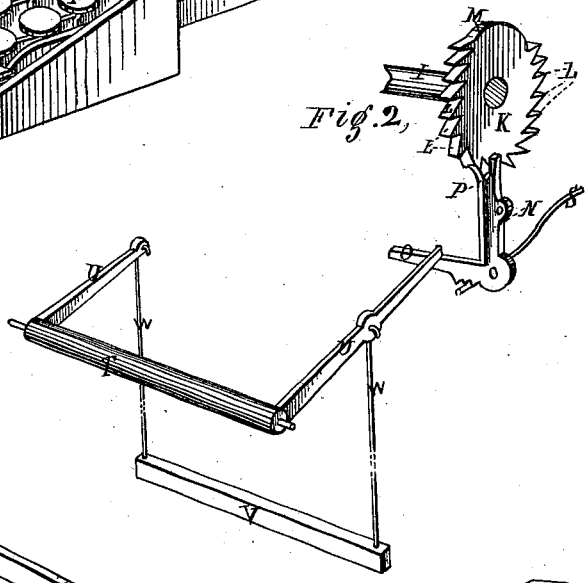


Fig. 3,

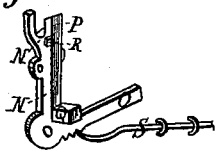


Fig. 4,

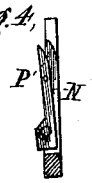


Fig. 5,

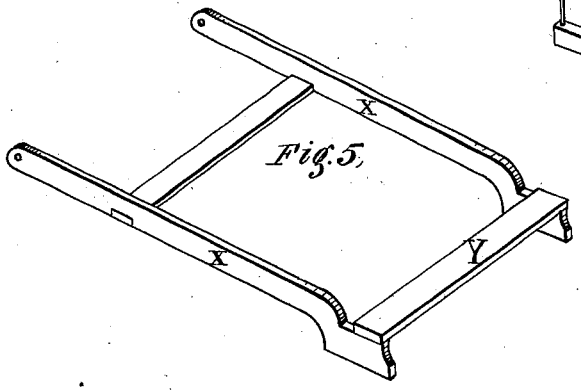


Fig. 7,

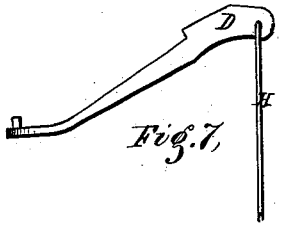
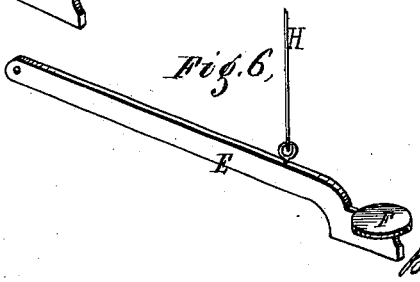


Fig. 6,



Witnesses
H. C. Edelen.
E. E. Masson

Inventors,
C. Latham Sholes,
Carlos Glidden.
By James Densmore, Atty.

UNITED STATES PATENT OFFICE.

C. LATHAM SHOLES AND CARLOS GLIDDEN, OF MILWAUKEE, WISCONSIN, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE TYPE WRITER COMPANY.

IMPROVEMENT IN TYPE-WRITING MACHINES.

Specification forming part of Letters Patent No. **200,351**, dated February 12, 1878; application filed January 16, 1874.

To all whom it may concern:

Be it known that we, C. LATHAM SHOLES and CARLOS GLIDDEN, of Milwaukee, Wisconsin, have invented Improvements in Type-Writing Machines, of which the following is a specification:

The nature of the invention is as follows: In combining two ratchets, attached together side by side, pointed practically in the same direction, and pivoted so they may vibrate in the same plane in one direction, but one pivoted separately, so it may vibrate independently in a plane at a right angle to that of the joint vibration, so they may vibrate in parallel planes in the reverse direction, with only one series of ratchet-teeth and notches, and with the key-levers, vibratory frame, paper-carriage, and platen of a type-writing machine; and in combining a horizontal bar, attached and pivoted so it may vibrate across in front of the key-levers, with the vibratory frame and letter-space ratchets of a type-writing machine.

The accompanying drawing and following description fully illustrate the invention.

The figures of the drawing represent views as follows: Figure 1, a view of a type-writing machine; Fig. 2, a view of the vibratory frame and letter-space ratchets and a series of ratchet-teeth and notches; Figs. 3 and 4, views of the letter-space ratchets; Fig. 5, a view of the space-key frame; Fig. 6, a view of a key-lever; and Fig. 7, a view of a type-bar.

The description is as follows: A represents the side plates of the main frame of a type-writing machine; B, the top plate on the side plates A; C, a slotted annular disk within an aperture in the top plate B; D, a type-bar pivoted in each radial slot of the annular disk C; E, a series of levers pivoted near the bottom, at the back part, and extended through to the front part of the main frame A B; F, a key on the front end of each pivoted lever E; G, a spring attached to each key-lever F E, and to a cross-bar above attached to the side plates A; H, a connecting-wire or ligament attached to the other end of each type-bar D, and to a corresponding key-lever, F E, below; I, a long shaft or main axle across over the middle of the annular disk C, in bearing-arms attached to the top plate B; J, a cylindrical platen on and attached so it may both turn with and slide along over the main axle I; K, a circular plate on near the end of the main axle I; L, a series of teeth, similar to saw-teeth, on the periphery of the circular plate K; M, a wide space, without any teeth, on the periphery of the circular plate K; N, a ratchet under the circular plate or ratchet-wheel K L, and pivoted so it may vibrate in a plane parallel with the longitudinal line of the main axle I, and work into and out from the notches of the ratchet-wheel K L; O, an arm attached to the vibratory ratchet N, and extended to and within the main frame A B; P, another ratchet attached to the first ratchet N, pointed practically in the same direction, and pivoted so they may vibrate in the same plane and work in the same notch of the ratchet-wheel K L, but one pivoted on a separate axis, so it may vibrate independently in a plane at a right angle to that of the joint vibration; Q, a weight or weighted end attached, below the pivot, to the second ratchet P; R, a stop attached, above the pivot, to the second ratchet P, so it may strike and stop against the first ratchet N; S, a lifting-spring attached to the side plate A, and extended under the ratchet-arm O; T, a bar attached and pivoted to and within the main frame A B, in line across over the key-levers F E; U, an arm attached to each end of the pivoted cross-bar T, and extended inwardly so they may vibrate in vertical planes parallel with the longitudinal lines of the key-levers F E, and one extended over, so as to rest on the ratchet-arm O; V, a bar across, under and up against the key-levers F E; W, a connecting-wire or ligament attached to each end of the under cross-bar V, and to the corresponding vibratory arm U above; X, a lever similar to and at each side of the series of key-levers F E, and in like manner pivoted at the rear, and extended through to the front, over the pendent cross-bar V; Y, a horizontal bar attached to the fore end of each side lever X, across in front of the key-levers F E; Z, a pulley attached to the end of the main axle I, and loose and adapted to turn on the axle in one direction, but to engage and turn the axle in the reverse direction; Z′, a cord attached by one end to the pulley Z; Z″, a weight, attached to the

other end of the cord Z'; and Z^2, an inking-ribbon attached to the ribbon-spools within the main frame A B, and extended up through the top plate B, and across over the middle of the annular disk C, under the platen J.

The operation is as follows: The depression of any key-lever F E will vibrate the type-bar D, and throw the type thereof up against the inking-ribbon Z^2 and platen J, and make an impression on the paper which is wrapped around the platen. At the same time the key-lever will depress the vibratory frame T U V W, which will depress the ratchet-arm O and vibrate the ratchets N P, and draw the doubly-pivoted ratchet P out of, and the singly-pivoted ratchet N into, the same ratchet-notch L, which will hold the ratchet-wheel K L, main axle I, and platen J from turning and the paper from moving while the type makes the impression; and at the same time, also, the weight or weighted end Q will vibrate the doubly-pivoted ratchet P thus drawn from the ratchet-notch L a notch-space distance in parallel reverse direction of the movement of the ratchet-wheel K L. The release of the key-lever F E will allow the lever-spring G to lift the lever to place, and allow the lifting-spring S to lift the ratchet-arm O and vibratory frame T U V W to place, and to vibrate the ratchets N P in the reverse direction, and thrust the singly-pivoted ratchet N out of its ratchet-notch, and thrust the doubly-pivoted ratchet P into the next notch back. At the same time, practically, the driving-weight Z'' will turn the main axle I, platen J, and ratchet-wheel K L, and move the paper a notch-space or letter-space distance, and vibrate the doubly-pivoted ratchet P in the direction of the movement of the ratchet-wheel till the stop R strikes against the singly-pivoted ratchet N, which stops all movement, and brings the ratchets again in normal position, ready for another operation. The singly-pivoted ratchet N does not vibrate in the direction of the movement of the ratchet-wheel, and holds the wheel and platen and paper from moving, and is therefore called the "stiff ratchet," but the doubly-pivoted ratchet P does vibrate in that direction, and allows the wheel and platen and paper to move, and is therefore called the "limber ratchet." The depression of the horizontal bar Y at either end, or any point between, will depress one or the other or both of the side levers X, which will depress the vibratory frame T U V W, and work the letter-space ratchets N P, and move the platen and paper without vibrating a type and making an impression; and it is therefore called a "space-key."

The combination of the driving-power Z'' and two parallel series of ratchet-teeth and notches, similar to the ratchet-teeth and notches L attached to the paper carriage or platen J, with two vibratory ratchets similar to the ratchets N P, but each attached to a separate end of a straight or bifurcated walking-beam, and with the key-levers F E and vibratory frame T U V W, to produce and regulate the intermittent letter-space movement of a type-writing machine, is a well-known device. So, also, a space-key similar to one of the key-levers F E, for working the vibratory frame and securing such intermittent movement, is a device common and well known; but the improvements which constitute this invention are as follows: First, the attachment of the two ratchets N P directly together, side by side, pointed practically in the same direction, and pivoted so they may vibrate in the same plane in one direction and enter the same ratchet-notch L, but one pivoted on another and separate axis, so it may vibrate independently in a plane at a right angle to that of the joint vibration, so they may vibrate in parallel planes in the reverse direction, and one enter the next notch back, renders unnecessary the walking-beam and second series of ratchet-teeth and notches referred to, and gives a simpler and cheaper and equally efficient device; second, the attachment of the horizontal bar Y across in front of and next to the key-levers F E to the two side levers X makes a space-key as long as the key-board is wide, and directly under and convenient to any finger of either hand; therefore,

What we claim is as follows:

1. The combination of two ratchets, attached together side by side, pointed practically in the same direction, and pivoted so they may vibrate in the same plane in one direction, but one pivoted separately, so it may vibrate independently in a plane at a right angle to that of the joint vibration, so they may vibrate in parallel planes in the reverse direction, with only one series of ratchet-teeth and notches, and with the key-levers, vibratory frame, paper-carriage, and platen of a type-writing machine, substantially as described.

2. The combination of a horizontal bar, attached and pivoted so it may vibrate across in front of the key-levers, with the vibratory frame and letter-space ratchets of a type-writing machine, substantially as described.

C. LATHAM SHOLES.
CARLOS GLIDDEN.

Witnesses:
H. W. SEYMOUR,
D. J. PAUL.