No. 874,661. PATENTED DEC. 24, 1907.

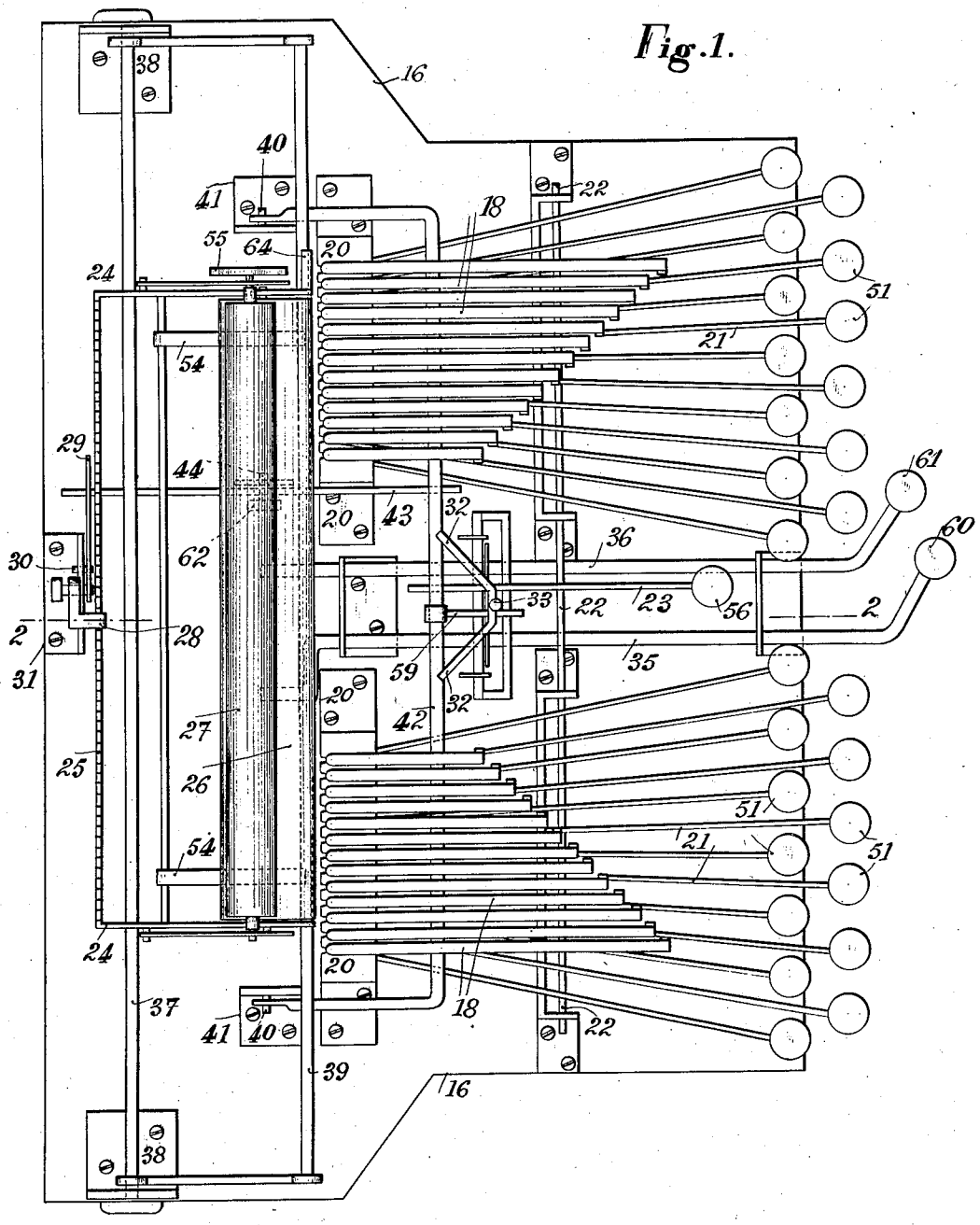
O. CORD.

TYPE WRITER.

APPLICATION FILED DEC. 12, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

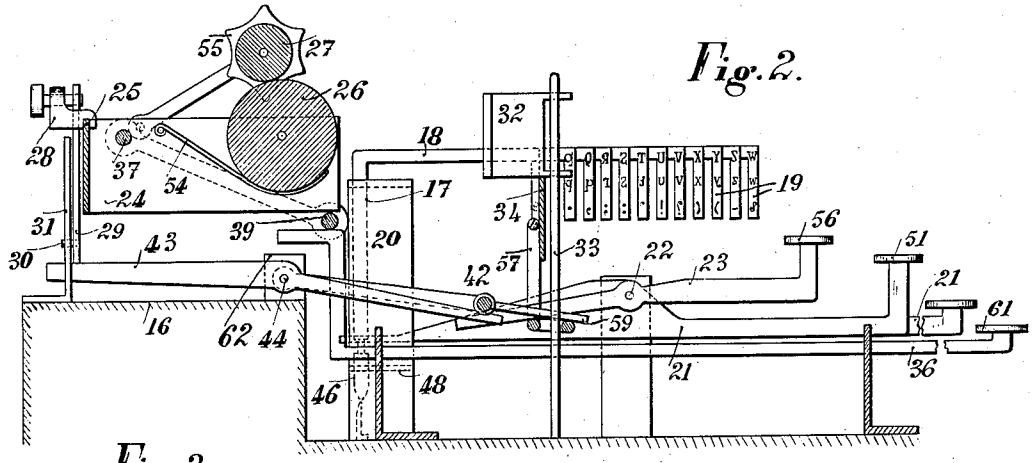
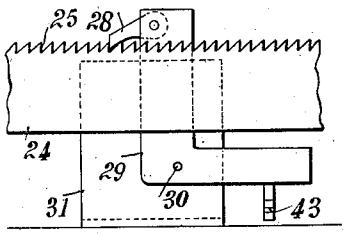


Fig. 2.

Fig. 3.



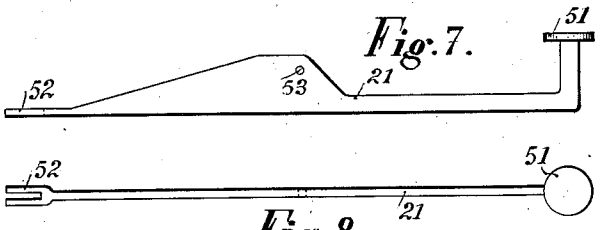


Fig. 7.

Fig. 8.

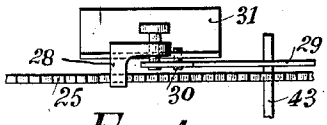


Fig. 4.

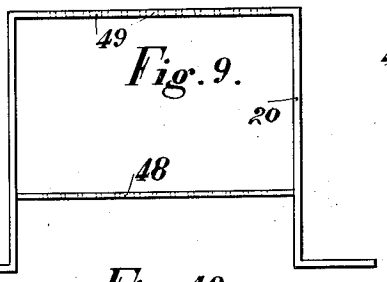


Fig. 9.

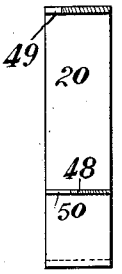


Fig. 10.

Fig. 11.

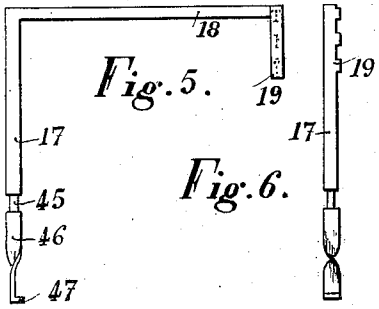


Fig. 5.

Fig. 6.

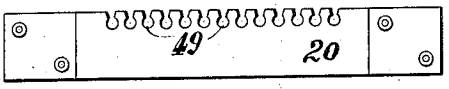


Fig. 12.

Fig. 14.

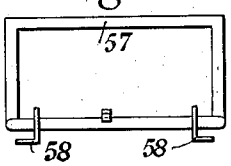
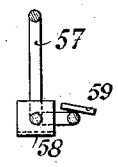


Fig. 13.



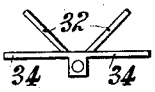


Fig. 15.

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Attorney

UNITED STATES PATENT OFFICE.

OCTAVE CORD, OF MONTÉLIMAR, FRANCE.

TYPE-WRITER.

No. 874,661. Specification of Letters Patent. Patented Dec. 24, 1907.

Application filed December 12, 1905. Serial No. 291,497.

To all whom it may concern:

Be it known that I, OCTAVE CORD, a citizen of the French Republic, residing at Montélimar, Drôme, France, have invented certain new and useful Improvements in Type-Writers, of which the following is a specification.

The principal objects of my invention are to provide a type-writing machine, preferably of the visible writing character, improved type-bars, each preferably bearing a plurality of characters, to provide actuating mechanism therefor, to provide an improved carriage adapted to be presented at the proper point to receive the printing stroke of any character carried by a key, to provide for the proper spacing of characters and words, to provide improved inking means, to provide a machine that is not complicated but which has comparatively great strength.

In the following description and claims and in the accompanying drawings I have shown a preferred embodiment of my invention for accomplishing the foregoing and hereinafter indicated objects.

In the drawings—Figure 1 is a plan view of the machine. Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is an elevation of the carriage feed mechanism. Fig. 4 is a plan view of the mechanism shown in Fig. 3. Fig. 5 is an elevation of a type-bar. Fig. 6 is an elevation of the type-bar, shown in Fig. 5, and taken at a plane normal to that of Fig. 5. Fig. 7 is an elevation of a key-lever. Fig. 8 is a plan view of a key-lever. Figs. 9, 10 and 11 are respectively front elevation, plan view, and transverse section of a frame for supporting and guiding the type-bars. Fig. 12 is a plan view of the lower plate of the frame shown in Figs. 9, 10 and 11. Fig. 13 is a front elevation of the bell-crank frame which returns the inking pad to its normal position. Fig. 14 is a section of the mechanism shown in Fig. 13. Fig. 15 is a plan view of the inking pad.

In the illustrated embodiment of my machine, 16 indicates the base-plate, to which are removably secured, at each side of its center, type-bar supporting and guiding frames 20, each composed of a top-plate, dependent sides which terminate in attaching feet, and a plate supported by the dependent sides and located below the top-plate.

The top and bottom plates of the frames 20 are provided, respectively with alining openings 49, 50 those of the top-plate being preferably circular, and those of the lower plate being preferably rectangular. Each alining pair of openings receives a type-bar composed of a horizontal arm 18, an outer vertically disposed type-bearing arm 19, and an inner vertically depending arm 17 which is formed with a circular upper portion, a reduced portion 45, forming a neck, and a lower portion 46, preferably rectangular, formed with a helical twist which terminates in a foot 47 adapted to normally rest upon the base 16, thereby supporting the weight of the type-bars. The type-bearing arm 19 carries, in vertical arrangement, a plurality of characters.

When the type-bars are in place in their frames, the circular upper portion of the arm 17 is positioned in a circular opening 49, the lower rectangular portion is positioned in a correspondingly shaped opening 50,—and the neck 45 is disposed above the lower plate 48 and is embraced by the forked end 52 of a key-lever 21 having a finger disk 51, and pivoted at 53 on a rod 22 upon which all of the keys are fulcrumed. This rod 22 extends across the base-plate 16, and, as shown, is supported in brackets secured thereto.

Along the center line 2—2 of the machine, brackets, as shown in Figs. 1 and 2, are secured to the base-plate 16. These brackets rotatably support rock-shafts 35—36, provided respectively at their front ends with finger-disks 60, 61 and formed at their inner ends with crank arms as shown in Figs. 1 and 2. The crank arm of rock-shaft 35, when the latter is at rest, occupies an approximately vertical position, as shown in Fig. 2, and in this position it forms a support for a bar 39, and the crank-arm of the rock-shaft 35 normally occupies a position approaching a horizontal and resting below the plane of rod 39, on a portion of base-plate 16. The rod 39 extends longitudinally of the machine and is provided at its ends with arms by means of which it is pivotally connected to a rod 37, supported in brackets 38 secured to the base-plate 16. The rod 37 together with the rod 39 and the arms connecting the latter to the former, form a rectangular frame which supports a U-shaped carriage 24, the rod 37 passing through openings in the opposite sides of the carriage, and forming a pivotal axis about which the carriage can be oscillated. The rod 37, together with the rod 39, upon which the front ends of the sides of the carriage rests, form a support on which

the carriage can slide laterally. It will thus be seen that, in its normal position, the carriage 24 is supported against downward rotation about its axis 37 by the cranked end of the rock-shaft 36, upon which the bar 39 rests, the latter in turn supporting the outer ends of the sides of the carriage 24. A platen 26 is rotatably supported by the carriage 24, and rolling in frictional contact with the platen is a paper-feed roll 27 rotatably supported in the outer ends of arms which are pivotally connected at their inner ends to the sides of the carriage 24. An outer end of the shaft of roll 27 is provided with a rowel 55, by means of which the line spacing of the writing can be manually accomplished. The rear side of the carriage 24, along the upper edge thereof, is formed with ratchet teeth 25. These are engaged by a pawl 28, pivoted to the vertical arm of a bell-crank lever 29 fulcrumed, at 30, to a support 31, secured to the base 16. The horizontally disposed arm, of the bell-crank lever 29 rests upon one end of a lever 43 pivoted at 44 to a bracket and stop 62, secured to the base-plate 16. The other end of lever 43 projects forwardly as shown in Figs. 1 and 2.

A bar 42, tends to form a U-shaped frame and is pivoted at the extremities of the legs thereof, upon pins 40 carried by brackets 41 which are secured to the base-plate 16. The longitudinal portion of the frame 42 rests upon all of the key-levers 21 intermediate their fulcrums and their ends engaging the type-bars, and this portion of the frame rests also upon the inner end of a lever 23, fulcrumed intermediate its ends on the rod 22, and provided with a finger disk 56, and finally the longitudinal portion of the frame 42 rests upon that end of lever 43 opposite to the end which supports the horizontal branch of the bell-crank lever 29.

The carriage 24 is provided with an arm 64 which projects from one side thereof and forms a hand grip for returning the carriage to its initial position.

In order that the paper, being printed, shall be properly guided and held to the platen 26, clips 54, carried by a rod supported by the sides of the carriage, embrace the lower surface of the platen 26.

An inking pad, comprising a plate 34, and inking wings, rigidly connected to, located above, and angularly disposed to the plate 34, is pivotally mounted on a rod 33 secured to and projecting vertically from the base-plate 16. The lower plate 34 of the inking-pad contacts with the upper bar of a bell-crank frame 57 composed of two open rectangular frames, disposed at an angle to each other, the inner member of each rectangle being formed by a bar, common to both, which forms the pivot for the bell crank frame, and which is fulcrumed in brackets 58. One portion of the bell-crank frame 57 is approximately vertical, and its upper bar, as before stated, contacts with, and is held against the plate 34 by an arm 59 which projects forward from the hinged frame 42 and presses downwardly upon the other rectangular arm of the bell-crank frame 57.

The type-bars as shown, are grouped on opposite sides of the center of the machine, and the vertical portions 17 of all of the type-bars being of substantially the same length, the horizontal portions 18 of all the bars occupy substantially the same horizontal plane. These horizontal portions however differ in length, the length increasing as the distance of the bars from the center of the machine increases so that all the bars when operated swing to the same printing point.

The operation of my machine is as follows: If it be desired to print a small letter, the carriage is permitted to remain in its normal position, shown in Fig. 2, in which position it is supported by the crank-end of rock-shaft 36. With the carriage in this position the disk 51 of character key 21 is depressed thereby rotating the forked end of its key upwardly, carrying therewith its type-bar, which is thus raised vertically until its character bearing arm 19 is above the plane of the horizontal portions 18 of the other type-bars, and as the type-bar is carried still further upward, its helical portion 46 is carried into engagement with the walls of its rectangular slot 50, which bearing upon the helical portion, causes the type-bar to turn on its leg 17 as a pivot, thus bringing the type-bearing arm 19, with its inked characters into forcible contact with the sheet on the platen to imprint a small character thereon. As the inner end of the key-lever 21 moved upwardly in the manner explained, it carried with it the hinged bar 42, resting thereon, and as the bar 42 had been resting on the front end of lever 43, keeping its rear end elevated, it will be seen that the rear end of lever 43, as a consequence of the upward movement of the bar 42, fell, thereby causing the bell-crank lever 29 to turn on its fulcrum, thereby drawing the pawl 28 towards the right of the machine, over the teeth 25 of the carriage. If now the pressure on finger-disk 51 be discontinued, the key-lever 21 will return to its normal position carrying the type-bar downwardly through its slots 49 and 50, the latter acting now to swing the type-bar back to its normal position. As the key-lever 21 returned to its normal position, the hinged bar 42 resting on the inner section thereof descended therewith, and again pressed downwardly upon the inner end of lever 43 elevating its other end, which in turn elevated the end of the arm of the bell-crank lever 29 resting thereon. This results in swinging the bell-crank lever about its axis, causing the pawl

28 to engage a tooth 25 of the carriage which thereby is carried one space to the left, and into a position ready to receive the next character imprint, properly spaced from the preceding one.

The inking of the characters prior to their impression upon the sheet carried by the platen, was accomplished in the following manner: As the type-bar swung to its printing position, from the position shown in Fig. 1, the characters carried by the arm 19 struck the inked surface of a wing 32, being thus properly inked, and as the type bar continued to turn, its character-bearing arm pushed the wing 32 before it, turning the inking pad around its axis 33 until the wing was out of the path of the type-bearing arm which thereafter continued its travel to the impression point. As the inking pad was turned on its pivot, the bell-crank frame 57, the upper bar of which was held against the frame 34, was, by the latter, turned in its bearings 58, this rotation of the bell-crank frame being possible as the arm 59, which held it stationary, had been raised by the bar 42 when the latter was elevated by the depressing of a key-lever 21. When the pressure had been removed from the key-lever, the consequent downward movement of the bar 42 caused its arm 59 to press on the lower arm of the bell-crank-frame 57, whose upper bar was thereby pressed against the plate 34 resulting in the return of the inking pad to its normal position.

If it be desired to print a capital letter, the position of which is at the top of the character bearing arm 19, the finger disk 60 of rock-shaft 35 is depressed, resulting in the turning of that shaft whose crank arm is thereby turned upwardly engaging and lifting upwardly the bar 39 which swings the carriage 24 upwardly about its axis 37 and thus brings the platen into a sufficiently elevated position to receive the printing impression of a capital letter, which is secured by striking the proper disk 51, the carriage being held elevated until the impression has been made. Pressure upon the disks 60 and 51 is now discontinued and the parts returned to the normal position.

If it be desired to print a numeral or a punctuation mark, the position of which is at the bottom of the character arm 19, the disk 61 of rock-shaft 36 is depressed, thereby turning the rock-shaft and lowering its crank, which normally supports the carriage in the position shown in Fig. 2, until it strikes the stop 62, which, stopping the further downward movement of the crank-arm, thereby holds the carriage with its platen in proper position, to receive the printing impression of a numeral or punctuation mark, which can be made by striking the proper disk 51 while the carriage remains in its lowered position. If pressure be now removed from the disks 51 and 61 the parts will return to their normal position.

The proper space between two words can be secured by striking the disk 56 of the bar or level 23, which elevates rod 42 and thereby operates the pawl 28 as will be understood.

When the carriage has reached the end of its travel to the left, it can be quickly returned to its initial position by grasping the arm 64, turning the carriage upwardly around its axis 37 thereby swinging its rack downwardly out of engagement with the pawl 28, and then pulling the carriage towards the right, after which the arm 64 is released and the carriage swings downwardly about its axis 37 into its normal position.

It will be observed that the construction of my machine renders the writing thereof visible, a decided advantage, and the inking mechanism presents a sure and positive means for accomplishing that object, while the machine as a whole is exceedingly simple, and its component parts are so designed, that they form a very strong machine.

Having thus described my invention what I claim as new, and desire to secure by Letters Patent thereon, is—

1. In a typewriting machine the combination with a type-bar having a helical formation for a portion of its length, of a key-lever engaging the type-bar and adapted to operate it vertically, a frame supporting, and adapted to guide the type-bar, one of the guide portions of the frame being formed with a slot which engages the type-bar and causes its rotation as it is carried vertically therethrough by the key-lever.

2. In a typewriting machine, the combination with a type-bar formed with a vertically disposed arm bearing a plurality of vertically arranged characters and formed also with another vertically disposed arm formed for a portion of its length with a helical twist of a key-lever engaging the type-bar and adapted to reciprocate it vertically, a frame supporting the type-bar and adapted to guide it the frame having an upper plate and a lower plate, each plate being provided with alining openings for the reception of the type-bar the opening in one of the plates being formed to engage the helical portion of the type-bar and causes its rotation as it is carried vertically therethrough by the key-lever, a platen, a hinged carriage carrying the platen, and a rock-shaft having an arm adapted to oscillate the carriage about its hinge to secure the proper elevation of the platen, to receive the printing impression of any of the characters carried by the type-bar.

3. In a typewriting machine the combination with a spacing bar, of a plurality of type-bars each formed with two vertically disposed arms and a horizontal arm connecting the vertical arms one of the vertical arms bear-

ing a plurality of vertically arranged characters and the other vertical arm being formed for a portion of its length with a helical twist, of key-levers engaging the type-bars and adapted to reciprocate them vertically, a frame supporting the type-bars and adapted to guide them, the frame having an upper plate and a lower plate each plate being formed with alining openings for the reception of the type-bars, the openings in the lower plate being formed to engage the helical portion of each type-bar and to cause their oscillation as they are carried vertically therethrough by the key-levers, a hinged carriage, a platen mounted in the carriage, an open rectangular frame, one side of the frame forming the hinge upon which the carriage is mounted and the opposing side of the rectangle forming a support for the free end of the carriage, a rock-shaft, having an arm upon which the supporting side of the rectangle rests, this arm being adapted to be lowered to bring the platen to a proper printing position for the lower characters, a second rock-shaft having an arm adapted to engage the supporting side of the rectangle to elevate the platen to a proper printing position for the upper characters, a toothed rack formed on the rear of the carriage, a bell-crank lever, a pawl carried by one arm of the bell-crank-lever and adapted to engage the rack, a lever pivoted intermediate its ends and supporting the other arm of the bell-crank-lever, and a hinged bar resting upon the key-levers and upon the spacing-bar, and also resting upon the other end of the lever which supports the pawl lever.

4. In a typewriting machine the combination with oscillatory type-bars and key-levers adapted to actuate the type-bars, of an inking pad formed with obliquely disposed inking faces and with a lower plate, a hinged bar resting upon the key-levers and having an outstanding arm, and a bell-crank frame having one of its arms engaged by the outstanding arm to hold the other arm of the bell-crank lever in engagement with the lower plate of the inking pad.

5. A type-bar consisting of a vertically disposed type bearing arm, a horizontal arm, and a second vertically disposed arm the latter having an upper circular part, a contracted neck, and a lower flat portion formed with a helical twist.

6. In a typewriting machine the combination with a plurality of type-bars each type-bar consisting of a vertical type-bearing arm, a horizontal arm, and a second vertical arm the horizontal arms of all the type-bars lying in substantially the same horizontal plane and the second vertical arms being of substantially the same length, eacn of the second vertical arms being formed with a helical twist, a frame having plates with alining openings in which the second vertical arms are mounted, the openings in one of the plates of the frame being formed to engage the helical portion of the type-bar as it moves vertically therethrough and cause its rotation, and key-levers engaging the type-bars and adapted to reciprocate them vertically, the type-bar being first raised clear of the other type-bars and a further vertical movement causing the rotation of the type-bar by the engagement of its helical portion with the specially formed opening in the plate of the frame.

In testimony whereof I affix my signature.

OCTAVE CORD.

In the presence of—

ROY AMAND,

PAUL BRYON.