

No. 682,759.

Patented Sept. 17, 1901.

C. & R. H. SEARS.
TYPE WRITING MACHINE.

(Application filed Nov. 12, 1900.)

(No Model.)

2 Sheets—Sheet 1.

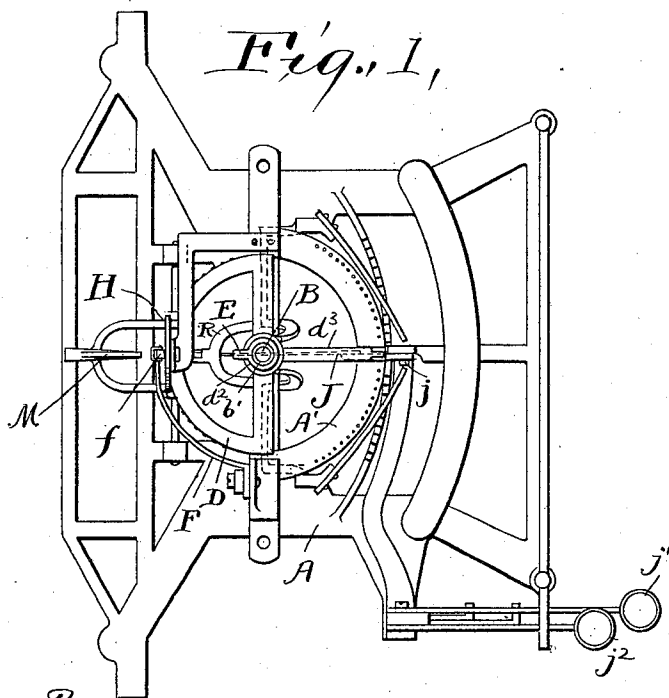


Fig. 3,

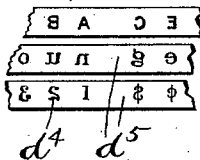


Fig. 2,

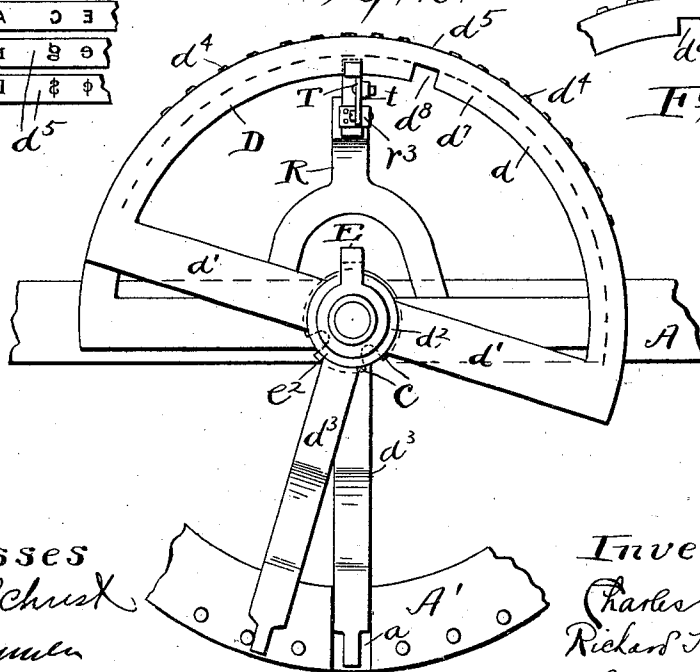


Fig. 4,

Witnesses
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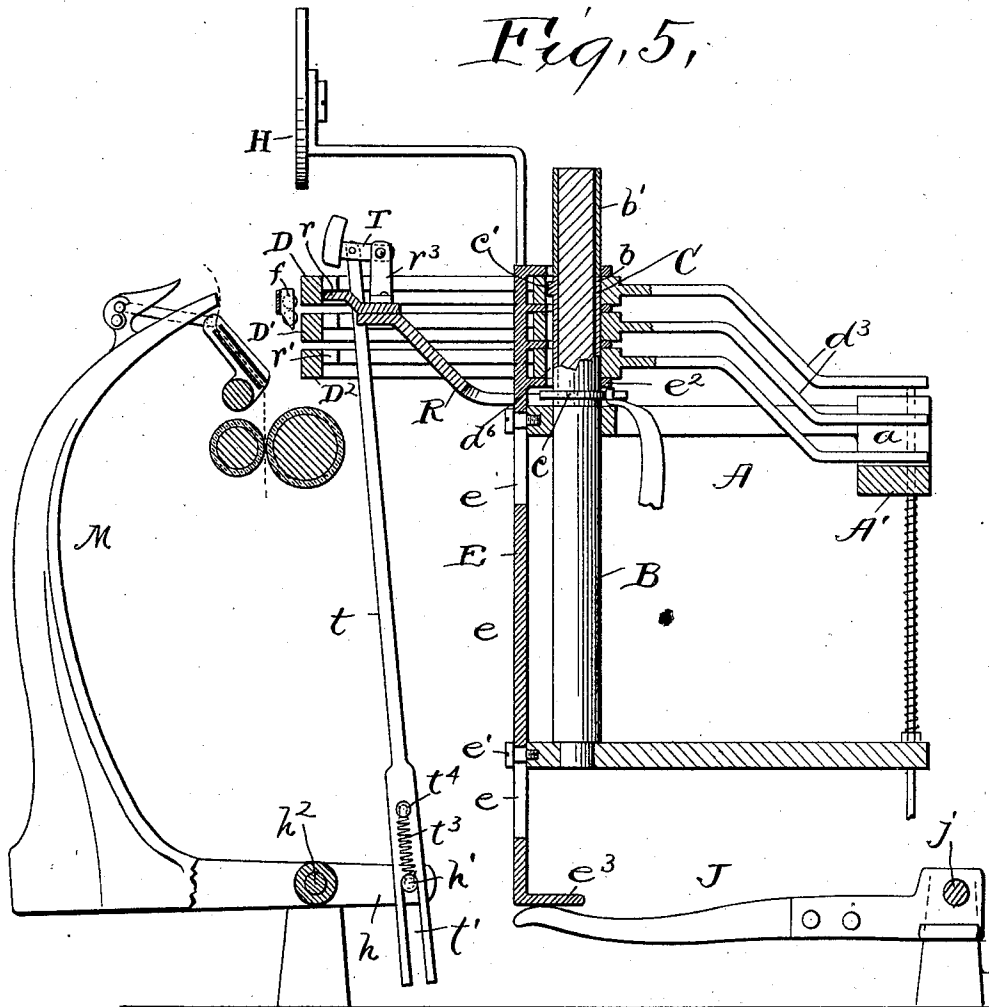
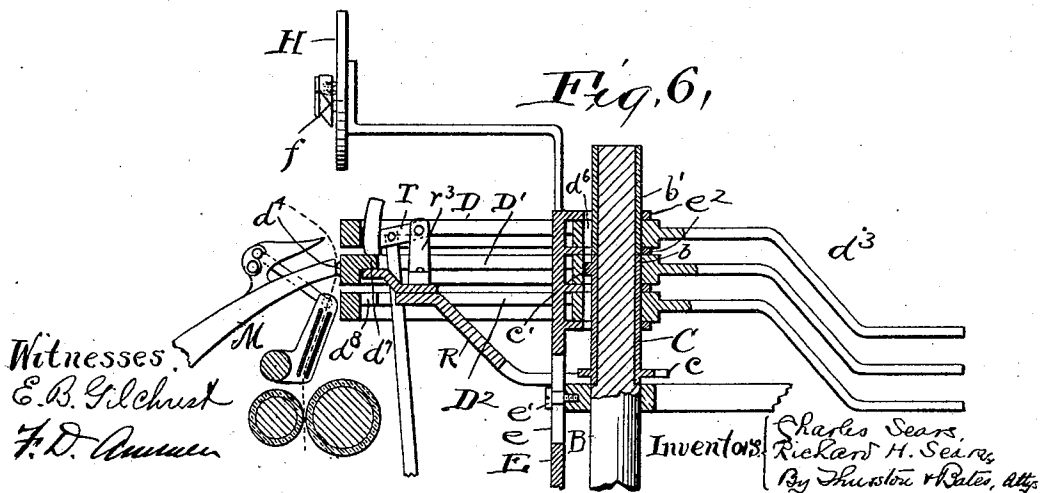
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2 Sheets—Sheet 2.



UNITED STATES PATENT OFFICE.

CHARLES SEARS AND RICHARD H. SEARS, OF CLEVELAND, OHIO; SAID
RICHARD H. SEARS ASSIGNOR TO SAID CHARLES SEARS.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 682,759, dated September 17, 1901.

Application filed November 12, 1900. Serial No. 36,180. (No model.)

To all whom it may concern:

Be it known that we, CHARLES SEARS and RICHARD H. SEARS, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Type-Writing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The invention relates to the class of type-writing machines, of which the Hammond machine is perhaps the most familiar example, in which a type wheel or segment is turned various distances in one direction or the other by the operation of finger-keys and intermediate mechanism to bring the desired type on its periphery to the impression-point.

The ultimate object of several improvements (of which the present invention is one) is to produce a machine of this class whose work will resemble letter-press printing.

The objects of this invention are to provide a construction adapted to print an indefinite number of characters without enlarging the diameter of the segment or segments, to properly ink that character and only that character which is about to be printed, and to produce the accurate alinement of the characters printed.

The invention consists in the construction and combination of parts hereinafter described, and pointed out definitely in the claims.

In the drawings, Figure 1 is a plan view of so much of the type-writing machine as is necessary to illustrate the invention. Fig. 2 is a plan view of the type-segments when one of them has been moved to bring a character thereon to the impression-point. Fig. 3 is a rear edge view of the middle part of the three type-segments employed. Fig. 4 is a plan view of the same part of said segments when they are in their normal position. Fig. 5 is a central sectional side elevation of so much of the mechanism as embodies the present invention when the parts are in their normal position. Fig. 6 is a similar kind of view showing only the upper part of the mechanism shown in Fig. 5 and show-

ing said mechanism when one of the characters is being printed.

Referring to the parts by letters, B represents a vertical cylindrical stud which is fixed to the framework of the machine and upon which the cylindrical sleeve C is rotatably mounted. This sleeve has at its lower end a flange *c*, with which suitable mechanism of familiar form, operable by finger-keys, engages to turn the sleeve various distances in one direction or the other. Vertical movement of this sleeve upon the stud B is prevented by a shoulder *b*, which in the form shown is the lower end of a sleeve *b'*, which is fastened to the upper end of the stud. A plurality (three are shown) of type-carriers D D' D² are rotatably mounted upon this stud. These carriers, as shown, are segments of skeleton form and consist of the curved rim *d*, the arms *d'*, and the hub *d*². Each has also a forwardly-extended stop-arm *d*³. On the outer periphery of the curved rim of each segment and arranged in a single row the type *d*⁴ are secured or formed. It will be noticed, however, by reference particularly to Fig. 3 that there is a blank space *d*⁵ in the middle of the curved rim—that is to say, in that part of said rim which when the segments are in their normal positions is in what will be called the "vertical" impression-line.

One or more inking-rollers *f*, which may be made of the same non-absorbent composition used in making printing-press rollers, are mounted in the end of a curved arm F, which is pivoted to the framework of the machine. This arm is of such length that the rollers move up and down in this vertical impression-line and contact with any character on either segment which is in that line. An inking-platen H is secured to a suitable support above the segments, and the rollers *f* roll upon this platen when the arm F is swung upward, and thereby said rollers take a fresh supply of ink.

A vertically-movable bar E, having vertical slots *e*, is secured to the frame A of the machine by means of screws *e'*, passing through said slots. At its upper end this bar has four horizontal arms *e*², which loosely embrace the sleeve C and lie, respectively, above, below,

and between the three segments, thereby maintaining the proper relationship between said segments. When this bar E is in its normal position, the upper segment D is in the impression-line. The lower end of this bar E has a foot e^3 , which rests upon the end of a lever J, secured to a rock-shaft j , which is rocked different distances by the manipulation of either of the two shift-keys j^1 or j^2 shown in Fig. 1. This rock-shaft, arm, and shift-keys, as shown, are of well-known form, and any other mechanical devices for lifting the bar E may be substituted for them. By lifting the bar the proper distance either of the two lower segments will be brought into the impression-line.

The sleeve C has a short tongue c , which lies normally in a vertical groove d^6 in the hub of the upper segment, and thereby the rotation of the sleeve compels the corresponding rotation of said segment. A corresponding vertical groove d^6 is formed in the hubs of the two lower segments, and said tongue will always lie in the groove and that segment which is in the impression-line. A corresponding notch is cut through the two intermediate arms e^2 , whereby they may move up and down without coming in contact with said tongue. As before stated, that segment which is in the impression-line is rotated when the sleeve C rotates by the engagement of said tongue with the groove in the hub of that segment. The stop-arm d^3 of the segment below that one which is in the impression-line lies normally in a vertical notch a in the curved frame member A' , whereby the rotation of said segments is prevented. The rotation of the segment next above the one on the impression-line is prevented by the engagement of the clamping-lever T (which will be presently described) in the notch d^3 in the flange d^7 .

In machines of this class the depression of any key-lever first operates the mechanism by which the segments in the impression-line is turned and the proper character brought to the impression-point. It then releases the impression-hammer M, which flies forward and forces the paper against said character. The mechanism operated by the finger-key whereby the sleeve C may be turned and the mechanism for releasing the hammer and for causing it to make its impression-stroke and for drawing it back to its normal position after it has made such stroke is not shown in the drawings, the same being no part of the present invention, and such mechanism may be of well-known construction. The arm which carries the inking-rollers is intended to be connected with the hammer, and said arm will be swung from its normal position, in which the rollers are in position shown in Fig. 5, up to the position shown in Fig. 6 as the hammer is making its impression-stroke. The connection between the hammer and this roller-carrying arm is not herein shown; but they may be substantially like the mechanism

for this purpose shown in the pending application, Serial No. 724,379, filed July 19, 1899, of Charles Sears.

From the foregoing statement it is apparent that when the inking-rollers move they will ink that character and only this character which has been brought to the impression-point and which is about to be printed and that they will not and cannot touch and apply ink to any other character on either segment. This is because only one segment is moved at one time from its normal position and because the segments which have not moved have no character on them in the plane traveled by said rollers. This is a matter of great importance in a machine intended to accomplish the results above referred to—namely, of producing results which resemble letter-press printing—for if the type to which ink is applied were not immediately printed from the type would become gummed with the ink and would not make the sharp clear impressions which it is desired they should make.

It is obvious that an indefinite number of segments may be employed, each mounted as those are which are shown. Each segment, like those shown, will have a single horizontal row of characters and will have no character in its middle point—that is to say, in that part which is in the vertical impression-line when the segment is in its normal position.

In order to obtain the proper alinement and position of every character printed, mechanism is provided which will clamp the segment which is in the horizontal impression-line after it has been moved to bring the proper character to the impression-point and will hold it firmly while said character is being printed. The clamping device and its operating mechanism are shown as follows: An arm R is fixed to the framework of the machine, and it has secured to its rear end a narrow finger r . The upper surface of this finger is in substantially the same plane with the under surface of an inwardly-extended flange d^7 on the inner periphery of the segment in the impression-line. Similar flanges are formed on each of the other segments, and through each flange a notch d^3 is formed. These notches when the segments are in their normal positions are in the same vertical plane with the finger r , and therefore the segments may be moved up and down without interference from said finger. A post r^3 is fastened to the same arm R, and to it a clamping-lever T is pivoted. This lever is directly over the finger r and is of such width that it may also pass through the notches d^3 in said flanges. A bar t is pivoted to this lever, and it extends downward and has a vertical slot t' in its lower end, which slot embraces a pin h' on an arm h , which is secured to the hammer or to the rock-shaft h^2 , to which the hammer is fastened, and this arm h extends forwardly, while the hammer extends rearwardly

from said pivot. A contractile coil-spring t^3 is fast at one end to said pin and at the other end to a pin t^4 , carried by said bar. When the hammer is in its retracted position, the pin h' engages with the end of the slot t' , and thereby the clamping-lever T is lifted. When, however, the hammer is released and moves forward on its impression-stroke, this arm h moves downward and, acting through said spring t^3 , draws the bar t downward and in turn draws down the clamping-lever T, whereby the flange d' is pinched or clamped between said finger r and clamping-lever T. The construction and operation of this mechanism may be clearly understood from the foregoing description and reference to Figs. 5 and 6. Fig. 5 shows said clamping mechanism and all of the other mechanism in its normal condition. Fig. 6 shows the same when the middle segment has been raised to the impression-line and has been clamped and the impression of the character at the impression-point is being made upon the paper through the action of the hammer. The lever T projects into the notches d^8 in the flanges d' of the segments above that one which is in the impression-line, and thereby the movement of such segments out of their normal positions is prevented.

Having described our invention, we claim—

1. In a type-writing machine, a plurality of independently-oscillating type-carriers, and mechanism for moving said carriers to bring any type on any carrier to the impression-point, combined with a movable inking-roller which will ink the one type, and only the one type, which is at the impression-point, substantially as and for the purpose specified.

2. In a type-writing machine, a plurality of movable type-carriers which are independently rotatable upon a common axis, each carrier having on its outer periphery a single row of type and a blank space which is in the vertical impression-line when the carrier is at rest in its normal position, mechanism for moving said carriers axially to bring any carrier into the horizontal impression-line, and means for turning that carrier only which is in the horizontal impression-line to bring any type thereon to the impression-point, combined with an inking-roller which is movable in the vertical impression-line whereby it contacts with that type, and only that type, which is at the impression-point, substantially as and for the purpose specified.

3. In a type-writing machine, a plurality of type-carriers which are independently rotatable upon a common axis, each having on its outer periphery a single row of type and a blank space which is in the vertical impression-line when the carrier is at rest in its normal position, means for moving said carriers axially to bring any character into the horizontal impression-line, and means for turning only the carrier in the impression-line to bring any type thereon to the impression-point, combined with an inking-roller which is movable

in the vertical impression-line, and an inking-platen with which said inking-roller contacts during its said movement, substantially as and for the purpose specified.

4. In a type-writing machine, a rotatable cylindrical member, and a plurality of type-carriers which are rotatably mounted on said member, and are also movable longitudinally thereon to bring any carrier into the impression-line, combined with means for connecting the carrier in the impression-line with said rotatable member, substantially as and for the purpose specified.

5. In a type-writing machine, a plurality of independently-rotatable type-segments having longitudinally-grooved hubs, and a rotatable cylindrical member on which said segments are mounted so as to be rotatable and longitudinally movable, which rotatable member has a short tongue adapted to engage in the groove of any segment-hub, combined with means for moving said segments longitudinally upon said member to cause the groove in any segment-hub to embrace said tongue, substantially as and for the purpose specified.

6. In a type-writing machine, a fixed cylindrical stud, a sleeve rotatably mounted thereon and having a short tongue, combined with a plurality of type-segments having longitudinally-grooved hubs which are mounted on said sleeve, combined with means for moving said segments longitudinally upon said sleeve to cause the groove in any hub to embrace said tongue, substantially as and for the purpose specified.

7. In a type-writing machine, a rotatable cylindrical member having a short external tongue, and a plurality of type-segments having longitudinally-grooved hubs which are mounted upon said cylindrical member, combined with a vertical movable member having arms to extend under the hubs of said segments and support and move the same, substantially as and for the purpose specified.

8. In a type-writing machine, a rotatable cylindrical member, a plurality of type-carriers which are mounted upon said member, and are movable longitudinally thereon to bring any type-carrier into the horizontal impression-line, means for connecting said rotatable member and that type-carrier which is in the said impression-line, stop-arms secured to said several type-carriers, and a frame having a recess into which some of the stop-arms project to prevent the rotation of their associated carriers, substantially as and for the purpose specified.

9. In a type-writing machine, an oscillating type-carrier adapted to be turned to bring any type thereon to the impression-point, combined with a clamping device for holding said character while the impression of said character is being made, substantially as and for the purpose specified.

10. In a type-writing machine, an oscillating type-carrier adapted to be turned to bring any type thereon to the impression-point, said

carrier having an annular flange, combined with two clamping members located respectively above and below said flange, an impression-hammer, and mechanism controlled by said hammer for operating said clamping members, substantially as and for the purpose specified.

11. In a type-writing machine, the combination of a rotatable member, a plurality of type-segments mounted to oscillate and to move longitudinally upon said member, each segment having a notched annular flange, means for moving said segments to bring any one into the impression-line, and means for moving any segment to bring any character thereon to the impression-point, combined with a fixed finger and a cooperating clamping-lever, both of which are narrower than the notches in said flanges, and mechanism for operating said clamping-lever, substantially as and for the purpose specified.

12. In a type-writing machine, the combination of an oscillating type-segment having an annular flange, a fixed clamping member, a movable clamping member, a rocking arm rigidly connected with the hammer and hav-

ing a crank-pin, a bar connected with the moving clamping member and having a slotted arm, which embraces the said crank-pin, and a spring connecting said rocking arm and bar, substantially as and for the purpose specified.

13. In a type-writing machine, a rotatable cylindrical member, a plurality of type-carriers which are rotatably mounted upon said member and are adapted to be moved longitudinally thereon to bring any carrier into the impression-line, and mechanism for so moving said carriers, combined with means for automatically connecting said rotatable member with that carrier which is in the impression-line, and mechanism which prevents the turning of the carriers which are not in the impression-line, substantially as described.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

CHARLES SEARS.
RICHARD H. SEARS.

Witnesses:

E. L. THURSTON,
E. B. GILCHRIST.