No. 696,304. Patented Mar. 25, 1902.

W. J. THOMPSON & P. BECKER.

TYPE WRITER.

(Application filed Mar. 25, 1901.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1

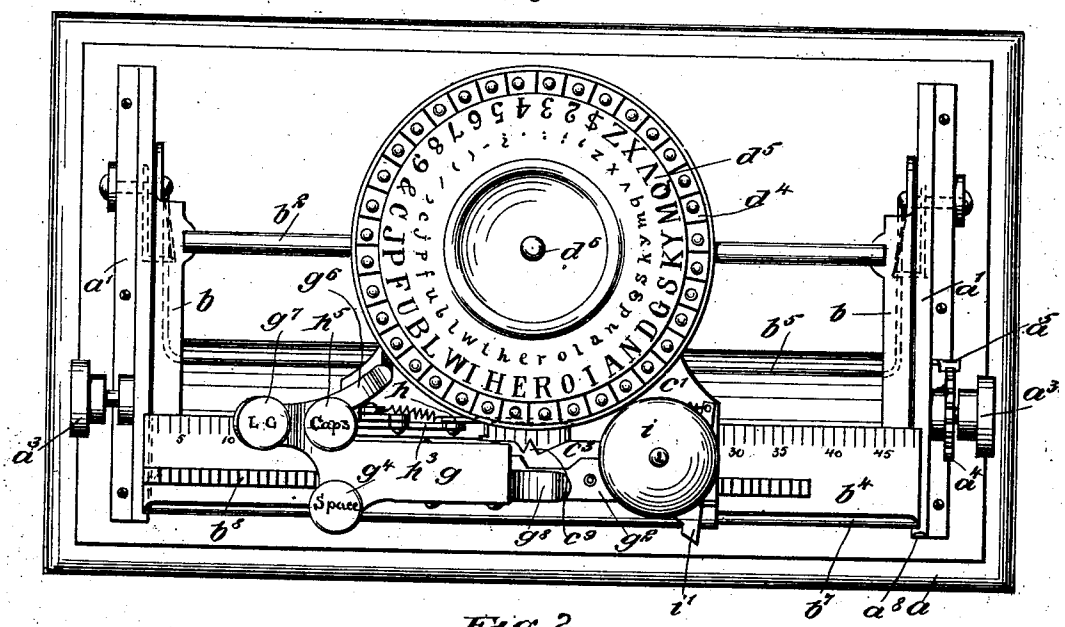

Fig 2

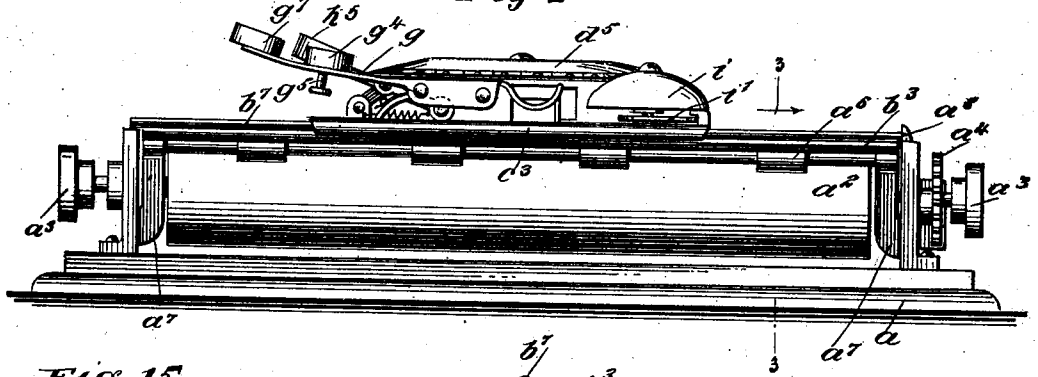

Fig. 15

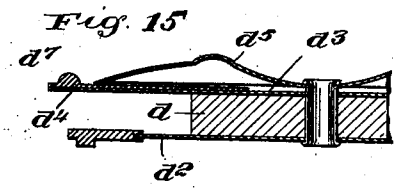

Fig. 3

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(Application filed Mar. 25, 1901.)

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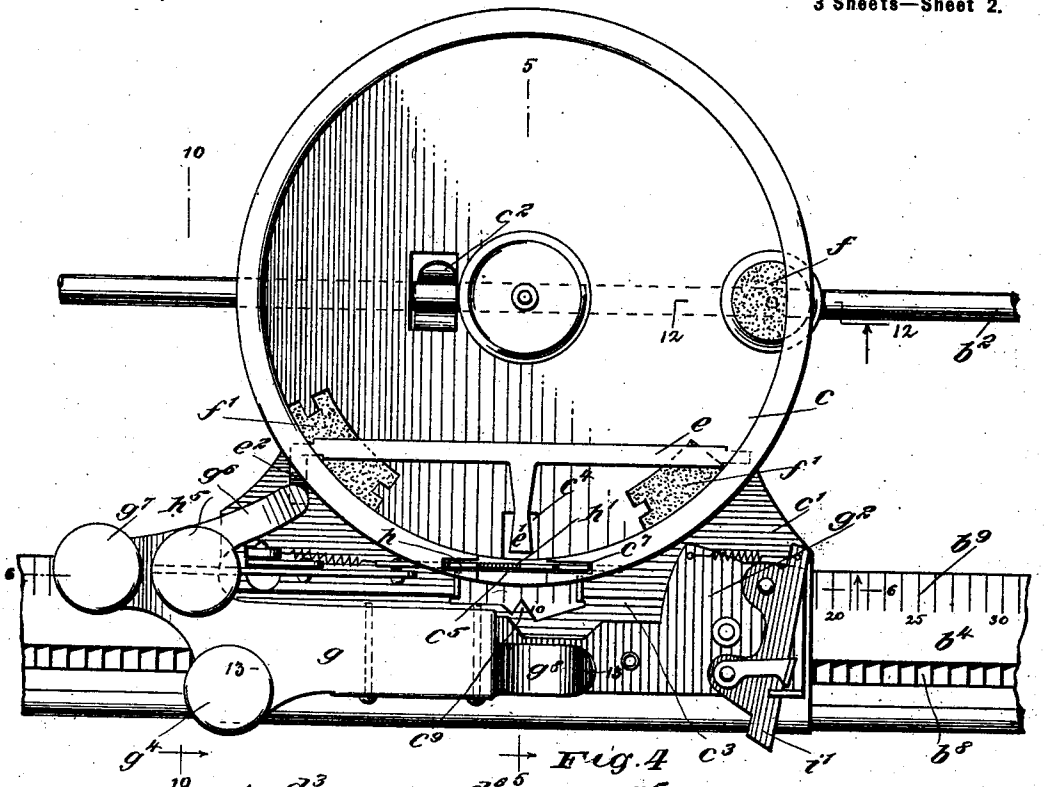

Fig. 4

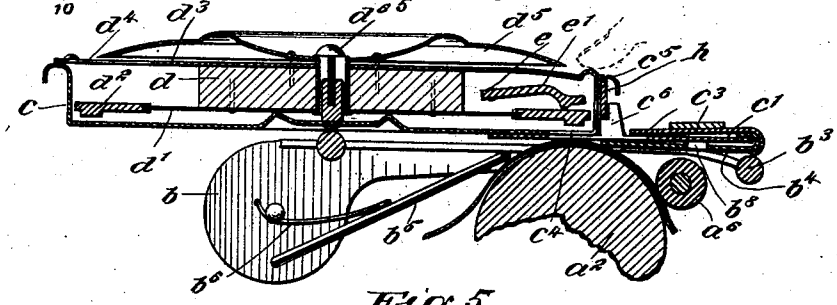

Fig. 5

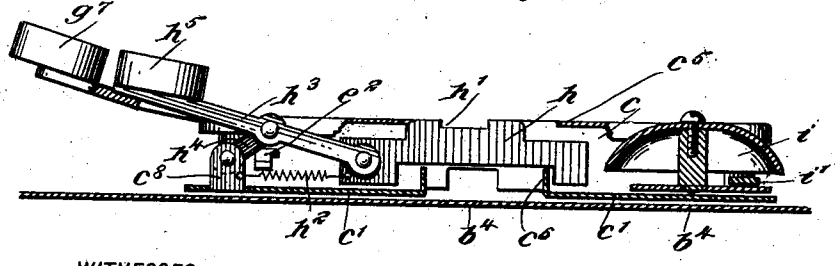

Fig. 6

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TYPE WRITER.

(Application filed Mar. 25, 1901.)

(No Model.) 3 Sheets—Sheet 3.

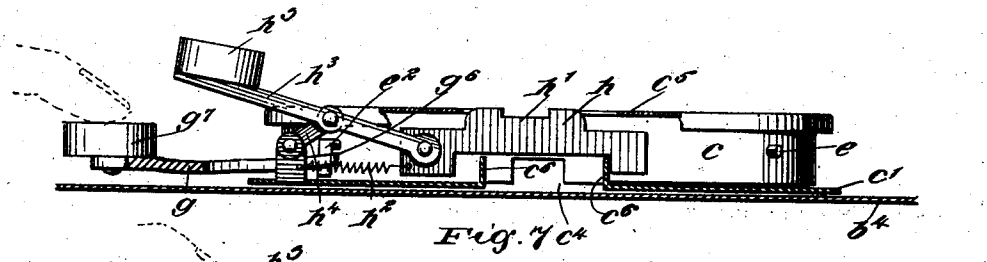

Fig. 7

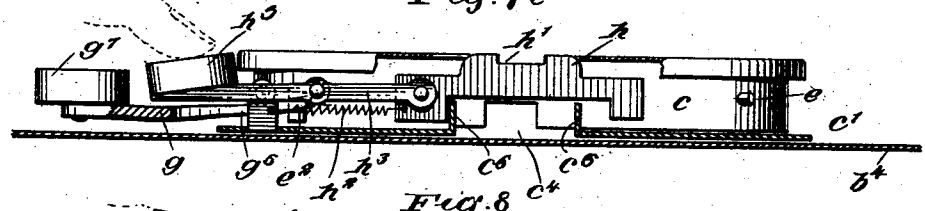

Fig. 8

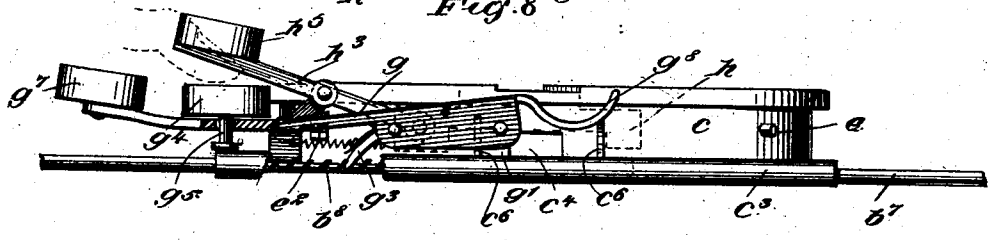

Fig. 9

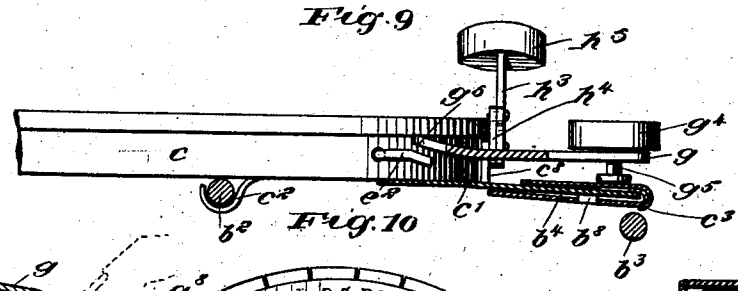

Fig. 10

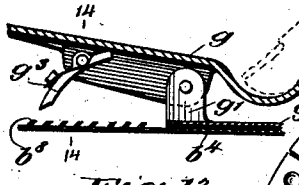

Fig. 13

Fig. 14

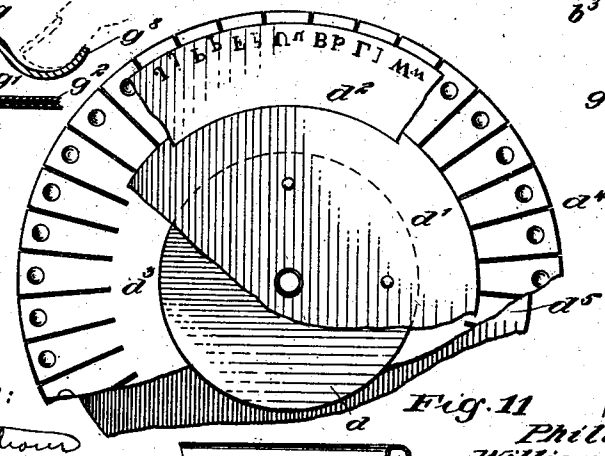

Fig. 11

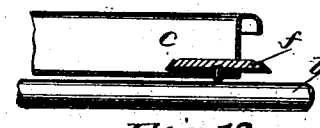

Fig. 12

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UNITED STATES PATENT OFFICE.

WILLIAM J. THOMPSON AND PHILIP BECKER, OF NEW YORK, N. Y.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 696,304, dated March 25, 1902.

Application filed March 25, 1901. Serial No. 52,674. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM J. THOMPSON and PHILIP BECKER, citizens of the United States, and residents of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Type-Writer, of which the following is a full, clear, and exact description.

This invention relates to a type-writer which in its preferred form embodies a flexible type-form mounted for rotary movement to locate the type for impression and arranged with certain peculiar devices for flexing the type to effect impressions, spacing the characters impressed, and effecting certain other results necessary to and advantageous in the operation of the machine.

This specification is the specific description of one form of the invention, while the claims are definitions of the actual scope thereof.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the invention. Fig. 2 is a front elevation of the same. Fig. 3 is a section on the line 3 3 of Fig. 2. Fig. 4 is a plan view of the machine with the type-form and bell removed. Fig. 5 is a section on the line 5 5 of Fig. 4. Fig. 6 is a section on the line 6 6 of Fig. 4. Figs. 7 and 8 are sectional views similar to Fig. 6, but showing the parts in different positions. Fig. 9 is a front elevation of the spacing, shifting, and impressing devices with parts broken away. Fig. 10 is a sectional elevation on the line 10 10 of Fig. 4. Fig. 11 is a fragmentary bottom plan of the type-form and finger-wheel. Fig. 12 is a section on the line 12 12 of Fig. 4. Fig. 13 is a section on the line 13 13 of Fig. 4. Fig. 14 is a section on the line 14 14 of Fig. 13, and Fig. 15 is a sectional view of a modified construction hereinafter more particularly described.

The general plan of the machine includes a base carrying the platen and also carrying a swinging frame movable toward and from the platen, which frame has a trackway mounting the carriage of the machine. The carriage sustains the type-form and the devices for locating and impressing the type and for moving the carriage on the trackway to space the characters impressed.

a indicates the base of the machine. On this base are erected side walls a', between which is mounted the platen a^2, which is in the form of a roller and fitted at its ends outside of the walls a' with finger-wheels a^3 for facilitating the manipulation of the platen. The platen also has a notched wheel a^4 on its axle, and with this wheel works a spring-catch a^5, serving to hold the platen in the position in which it is placed. A roller a^6 is arranged in front of the platen a^2 and parallel therewith and serves to press the paper properly against the platen, as shown best in Fig. 3. This roller a^6 is held in spring-bearings a^7, which apply the proper pressure to the roller.

The carriage-frame comprises two side bars b, arranged one immediately adjacent to the inner side of each wall a' of the base and pivotally mounted thereon at the points b'. These side bars b are connected together by transverse bars or rods b^2 and b^3, the bar b^2 being arranged at the rear portions of the side bars b and the bar b^3 being arranged at their front extremities. The side bars b of the frame are further connected together by a plate b^4, which extends transversely between the side bars at the front ends thereof. The parts b^2 and b^4 form a track on which the carriage runs, as will be fully explained hereinafter. The carriage-frame thus mounted is movable on its pivots b' toward and from the platen, so as to occupy the position shown in Fig. 3 or that shown in Fig. 5. The rear or pivoted ends of the side bars b of the carriage-frame are enlarged, as shown best in Figs. 3 and 5, and carry pivotally the ends of an essentially U-shaped guard b^5. This guard extends forwardly to a point over the platen a^2 and is pressed against the same part by springs b^6. The guard b^5 serves to bear down on the paper as it passes over the platen and not only to hold the same properly engaged therewith, but also to smooth out the paper as the carriage-frame is lowered into active position. (See Fig. 5.) This smoothing effect is due to the connection of the guard b^5

with the ends of the side bars b at a point off the center of the movement of the side bars, so that as the carriage-frame swings the guard b^5 is drawn rearwardly over the platen, and by this movement it smooths out the paper. Paper is inserted into the machine by moving its top edge upward between the platen and the roller a^6 and then passing said edge between the platen and the guard b^5. This is shown in Figs. 3 and 5.

The carriage comprises a circular casing or basket c, containing the type-form, and a body plate c', attached to the front portion of the basket c at the under side thereof and extended forwardly over the plate b^4, the front edge of said plate being turned upwardly, as indicated at b^7 in Fig. 3, and the front edge of the body-plate c' being projected under said upturned edge of the plate b^4, so as to fit slidable therein. The basket c of the carriage lies over the bar b^2 and is slidably held thereon by a tongue c^2, which is struck up from the material forming the basket. Fastened to the body-plate c' of the carriage is a clamping-plate c^3, which lies over the top of the plate c' and has its front edge turned downward around the upturned edge b^7 of the plate b^4. This construction is shown best in Fig. 5 and is also visible in Fig. 10. The plates c^3 and c' being firmly fastened together press between them the upturned front edge of the plate b^4, and thus mount the carriage friction-tight on the plate b^4 and at the same time hold it incapable of any movement but a sliding movement in a direction longitudinally of the said plate b^4. It will thus be seen that the parts b^2 and b^4 form the track on which the carriage is mounted and that this track is carried by and forms part of the carriage-frame. The parts c, c', and c^3 form the principal parts of the carriage, as illustrated in the drawings. The parts are so arranged that the front portion of the basket c will lie just over the platen a^2, as best shown in Fig. 5, and the front portion of the basket, as well as the body-plate c' of the carriage, are formed with orifices, (indicated at c^4 in Figs. 4 and 5,) through which orifices the type-form is flexed to impress a type.

The finger-wheel and the type-form are best illustrated in Figs. 5 and 11 and comprise a body member in the form of a disk d, to the bottom side of which is fastened a plate d', preferably of metal, this plate carrying at its periphery a flat ring d^2, of rubber or other flexible material, on the under side of which the type are produced, as shown in Fig. 11. The parts d' and d^2 constitute the type-form. The finger-wheel comprises a disk d^3, preferably of metal, which is fastened to the top of the block d and which has fingers d^4 formed on its periphery, such fingers corresponding with the type on the ring on the type-form. Over the finger-wheel d^3 is arranged a cap-plate d^5, all of these parts being fastened to the block d. As Fig. 11 will best show, the type-form is provided with upper and lower case letters, and these letters are all arranged in one circular line on the type-form. Fig. 11 will also show that each of the fingers d^4 of the finger-wheel are arranged so that beneath it will occur one upper-case character and one lower-case character of the same form. The parts composing the type-form and finger-wheel are mounted to turn within the basket c of the carriage on a suitable device, (indicated at d^6,) such device forming a pivot or axle for the parts. The type-form lies wholly within the basket c, just over the bottom thereof, while the finger-wheel has its periphery arranged just above the upper edge of the basket c, which edge is turned over and outward, as shown in Fig. 5. The type on the type-form are arranged so that they will lie just over the openings c^4 in the carriage, thus permitting the type-form to be flexed so that any one of its type will pass through the opening and engage the paper on the platen.

The impression device comprises a rock-bar e, which is pivotally mounted within the basket c of the carriage and which extends parallel with the parts b^2 and b^4 of the carriage-frame. This rock-bar e has a transverse finger e', projecting forwardly to a point immediately over the opening c^4 in the bottom of the carriage. This impression device lies in the basket between the type-form and the finger-wheel, such device being over the type-form, so that by rocking the arm e' downward (assuming that the parts are in the adjustment shown in Fig. 5) the type-form will be flexed by the arm e' downward through the opening c^4 in the carriage and caused to impress a type upon the paper on the platen. The impression device is normally sustained in the position shown in Fig. 5 by the flexible character of the type-form; but of course this flexibility of the type-form yields to positive pressure upon the impression device.

The type-form is kept inked continuously from an inking-pad f, which is mounted to turn within the basket c of the carriage in position to be engaged by the top of the form as the type thereon turns around its pivot d^6. For cleansing the type of superfluous ink and keeping them uniformly supplied we provide two wiper-pads f', which are located in the bottom of the basket c, respectively, on the sides of the opening c^4, as best illustrated in Fig. 4. The result of this arrangement is that no matter in which direction the type-form be moved any type passing from the inking-pad f to a point over the opening c^4 will have engaged one of the wiping-pads f' and will thus be rid of superfluous ink, which would interfere with a clear impression of the type.

The carriage is advanced along its track with a step-by-step movement to space the

printed characters apart, and the device for effecting this movement forms a part of the device for actuating the rock-bar e to impress a type. This device comprises a key member g, which, as best shown in Fig. 14, is pivotally mounted on lugs g', struck up from a plate g^2, which plate is fastened on the carriage over the plate c^3. The key member g is provided with a spring-pawl g^3, which works on a rack b^8, formed on the plate b^4 by striking up small tongues thereon, as illustrated best in Fig. 13. By pressing down the left-hand end of the key member g the spacing-pawl g^3 is caused to engage the rack b^8 and advance the carriage along its track. The key member g carries a key g^4, which has a stem g^5, headed at its lower end and fitted loosely in the key member. When the key g^4 is pushed down, as indicated in Fig. 9, it moves downward the key member g sufficiently to operate the pawl g^3 and space the carriage for the width of one letter of the type-form; but the downward movement of the key g^4 is checked when this point is reached by the engagement of the bottom end of the stem g^5 with the carriage. This position of the parts is shown in Fig. 9. The purpose of this arrangement is to enable the carriage to be spaced without effecting an impression of the type, notwithstanding that the spacing and impression devices may be so closely associated with each other as to enable these operations to be performed by a single movement, if desired. The key g^4 is therefore the spacing-key and is marked as such in Fig. 1. The key member g has an extension g^6, which lies over the transverse arm e^2, formed on the left-hand end of the rock-bar e, as shown best in Fig. 4. Mounted on the member g is a second key g^7, which is fastened rigidly thereto. When this key g^7 is pushed down, it carries the key member g down a distance sufficient not only to operate the spacing-pawl g^3, but also to engage the extension g^6 with the arm e^4 of the rock-bar e and impart a downward movement to the finger e' of the said bar, this movement resulting in the impression of a type, as before explained. This extensive downward movement of the key member g will not be interfered with by the key g^4 or the stem g^5 thereof, since this stem is loosely movable in the key member, and when its lower end strikes the carriage the downward movement of the key g^4 will cease and the key member g will continue its movement independently of the key g^4. It follows, therefore, from the above description that the carriage may be spaced and a type impressed by a single movement of the key member g, effected by pressing down on the key g^7. It also follows that should the operator desire simply to space the carriage this may be done by pressing down on the key g^4. The right-hand end of the key member g is provided with a finger-piece g^8, adapted to be engaged by the fingers of the operator, as shown in Fig. 13, so as to throw upward one end of the key member g and raise the pawl g^3 out of engagement with the rack b^8. This will permit the carriage to be returned to its starting-point.

It has been explained that the type-form is provided with a single row of characters concentric to the pivot d^6 and made up of upper and lower case type arranged in groups, the lower-case characters being alongside of the respective upper-case characters, and each group of characters having one of the fingers d^4 of the finger-wheel d^3 arranged just above it. The type-form is adjusted around its axis to position the type for impression, and it is adjusted or shifted in the same manner to place the type-form in position to impress an upper or lower case type. The front portion of the basket c of the carriage is formed with a recess c^5. In this recess is adapted to be depressed the fingers of the finger-wheel. The operator wishing to adjust the type-form finds the desired letter on the cap-plate d^5 and then turns the finger-wheel around until the proper finger lies over the depression c^5 and while slightly bearing on said finger turns the plate in the direction of depression c^5, into which the finger will drop automatically. He then presses this finger down in said depression. Mounted against the front side of the basket c and held in such position by lugs c^6, struck up from the body-plate c' of the carriage, is a shifting device in the form of a plate or bar h, set edgewise, as shown. This plate has a raised upper portion fitted in a slot c^7 in the outwardly-turned upper edge of the basket c at the front thereof, and the upward extension on the shifting plate h is formed with a depression or notch h' therein. This notch is of sufficient size to receive easily one of the fingers of the finger-wheel, and the shifting plate h is mounted to slide tangentially of the said wheel, the depression c^5 of the basket c being larger than the depression h', so that one of the fingers of the finger-wheel may be moved down into the depression h' and held there and the bar h shifted to give the finger-wheel and the attached type-form a slight movement around its axis without displacing the finger d^4 from the depression c^5. The normal position of the shifting device is that shown in Fig. 6, and when the shifting device is in this position and the finger-wheel adjusted so that the desired finger lies in the depression h' by operating the key g^7 a lower-case type will be impressed. To impress an upper-case type, the shifting device must be moved to the right from the position shown in Fig. 6 to that shown in Fig. 8. This will turn the type-form sufficiently to bring the upper-case type in position, and upon operating the key member g an upper-case character will be impressed. The shifting device h is held in its normal position (see Fig. 6) by a retractile spring h^2,

and pivotally connected with the shifting device is a key member h^3. This key member has a link h^4, connecting it with a stud c^8 or other suitable device formed on the body-plate c' of the carriage. The key member h^3 has a key h^5 fastened thereto, and the front end of the key member h^3 is extended over so as normally to lie upon the key member g. By pressing down on the key h^5, owing to the action of the link h^4, the shifting device h will be moved from the position shown in Fig. 5 to that shown in Fig. 8, and, further, the downward movement of the key h^5 will cause the key member g to be thrown down at its left-hand end, thus engaging the extension g^6 of the key member g with the arm e^2 of the impression device and causing the finger e' to engage the type-form to operate it. It will follow from the above description that the operation of the key h^5 will result, first, in the shifting movement of the bar h to place an upper-case type in position for impression and, second, in operating the impression-finger to impress the type and operate the spacing-pawl to advance the carriage. Therefore whatever it may be the desire of the operator to effect—that is to say, whether he desires to space the carriage or to space the carriage and impress a lower-case type or to space the carriage and impress an upper-case type—it is only necessary for him to effect one movement—that is to say, to press down the proper one of the three keys involved in the machine.

On the plate b^4 of the carriage-frame is formed a scale b^9, and with this scale reads an indicator-point c^9, formed on the clamping-plate c^3 of the carriage, such indicator-point c^9 constituting part of the front wall of an orifice formed in the carriage immediately in front of the basket c thereof, so as to expose the scale to view. In connection with this scale it will be seen by reference to Fig. 5 that the plate b^4 of the carriage-frame lies with its rear edge immediately over the platen, and consequently over the paper held thereon, and the scale b^9 being formed on the rear edge of the plate b^4 will lie in the immediate vicinity of the line of the last letters impressed on the paper. Consequently a person glancing along this line of letters will be able to see the position of any one thereof with respect to the scale.

On the right-hand extremity of the plate g^2 is carried a bell i, with suitable mechanism i' (see Figs. 4 and 6) for ringing the bell by engagement of said devices i' with a detent a^8, formed on one of the walls a' of the base a, this bell being arranged to sound as the carriage reaches the end of its movement in a similar manner to other machines of this character.

In using the type-writer the paper should be placed on the platen, as explained, and one hand should be employed to manipulate the keys g^4, g^7, and h^5, while the other hand is employed in adjusting the type-form and finger-wheel. This adjustment of the finger-wheel is effected by selecting the character desired to be impressed and turning the finger-wheel until this character lies in the proper position. Owing to the peculiar manner in which the keys and key members are disposed to space, shift, and impress the type, these various functions may be performed very rapidly and correctly.

In the modification shown in Fig. 15 the fingers d^4 of the finger-wheel d^3 instead of having the knobs formed by bending up a portion of the metal forming the fingers, as in the other views, are provided with rubber finger members d^7, covering the fingers and having knobs or raised portions formed integral therewith to be engaged by the fingers of the operator. These finger members d^7 are independent of each other and are disposed radially, the same as the fingers d^4.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a type-writer, the combination of a base, a platen thereon, a carriage-frame mounted on the base to move toward and from the platen, a carriage movable on the frame, a type-form on the carriage, the type-form being adjustable to position the type for impression, an index-wheel for the type-form, said wheel having flexible fingers arranged in relation to the characters on the wheel, means for impressing the type, and means for moving the carriage to space the type.

2. In a type-writer, the combination of a platen, printing devices, and a paper-guard in connection with the printing devices, said guard sliding over the paper to smooth it as the printing devices are moved into operative position.

3. In a type-writer, the combination of a base, a platen thereon, a frame mounted on the base to move toward and from the platen, printing devices on the frame, and a paper-guard connected with the frame to slide over and smooth the paper on the platen as the frame is moved to operative position.

4. In a type-writer, the combination of a base, a platen thereon, a frame mounted pivotally on the base to swing toward and from the platen, and a paper-guard mounted on the frame off the center of movement of the frame and pressed to the platen, for the purpose specified.

5. A type-writer, comprising a track, and a carriage mounted to move thereon, said carriage having two members clamping a part of the track between them to render the carriage friction-tight on the track.

6. A type-writer, comprising a track, a carriage mounted thereon and having a circular basket and a body-plate projecting forwardly therefrom, a type-form mounted in the basket

of the carriage, an index-wheel above the type-form, the index-wheel having raised fingers aiding in locating a type, and impression and spacing mechanism mounted on the body-plate of the carriage.

7. A type-writer, having a base, a platen, a carriage-frame mounted on the base, and comprising a track, a carriage mounted on the track and having a part turned over one edge of the track to prevent lateral movement of the carriage on the track, and printing mechanism arranged on the carriage.

8. In a type-writer, a type-form mounted to turn and having upper and lower case letters, in combination with an index-wheel having upper and lower case letters and provided with fingers, of which single fingers serve to indicate both an upper-case and a lower-case letter.

9. In a type-writer, a type-form mounted to turn and having upper and lower case letters in a single circular line, in combination with an index-wheel having upper and lower case letters in separate circular lines and formed with fingers, of which single fingers serve to indicate both an upper and a lower case letter.

10. In a type-writer, the combination with a type-form, of printing devices including a key capable of shifting the type-form and impressing a type by a single movement.

11. In a type-writer, the combination of a track, a carriage mounted thereon, a type-form on the carriage, spacing devices for the carriage, a shifting device for the type-form, means for operating said devices in succession, and means for operating the spacing devices independently.

12. In a type-writer, the combination of a track, a carriage mounted thereon, a type-form on the carriage, an impression device for the type-form, a shifting device for the type-form, means for operating said devices in succession, and means for operating the spacing devices independently.

13. In a type-writer, a type-form, an impression device therefor, a shifting device therefor, and means for operating said devices either in succession or independently.

14. In a type-writer, a type-form, an impression device, a shifting device, and a key member for each of said devices, the key member of one lying in the path of movement of the other, for the purpose specified.

15. In a type-writer, a type-form, an impression device, a shifting device, and a key member for each of said devices, the key member of the impression device lying in the path of movement of the key member of the shifting device.

16. In a type-writer, a type-form, a rock-bar having an impression-finger arranged to strike the type-form, a finger-wheel connected to the type-form, a shifting-bar adapted to be engaged by the finger-wheel, means for operating the shifting-bar and rock-bar in succession, and means for operating the rock-bar independently.

17. A type-writer having a type-form, an impression device therefor, a spacing device, and a key member for actuating said devices, the key member moving partially to actuate one of said devices and further to actuate both.

18. A type-writer, having a type-form, an impression device therefor, a spacing device, a key member working with said devices, and a key carried on said member to have limited independent movement with respect thereto.

19. In a type-writer, the combination of a track, a carriage thereon, a type-form on the carriage, an impression device, a spacing device for moving the carriage on the track, and a key member for actuating said devices, the key member moving partially to actuate one of said devices and farther to actuate both.

20. In a type-writer, the combination of a track having a rack thereon, a carriage mounted on the rack, a type-form mounted on the carriage, an impression device, a spacing-pawl working with the rack to space the carriage, and a key member for actuating the impression device and the pawl, said member moving partially to actuate the pawl independently and moving farther to actuate the pawl and impression device simultaneously.

21. A type-writer having a type-form, a finger-wheel connected thereto, means for impressing the type-form, a shifting-bar adapted to be engaged by the finger-wheel, and means for actuating the shifting-bar.

22. A type-writer having a type-form, and an impression device comprising a rock-bar provided with a laterally-projected finger to engage the type-form.

23. A type-writer having a type-form, an impression device comprising a rock-bar provided with a laterally-projected finger to engage the type-form and also having a laterally-projected arm, and a key member in the path of movement of which said arm of the rock-bar lies, for the purpose specified.

24. A type-writer, having a flexible type-form, a rock-bar mounted over the type-form and having a laterally-projected impression-finger bearing on and normally sustained by the type-form, said rock-bar also having a lateral arm, and a key in the path of movement of which said arm of the rock-bar lies, for the purpose specified.

25. A type-writer having a base, a platen thereon, a carriage-frame mounted on the base to move toward and from the platen, and having a part with a scale thereon, a carriage and printing mechanism mounted on the frame, the scale being readable with reference to the carriage and printing mechanism.

26. In a type-writer, a type-form and shifting mechanism therefor comprising a shift-

bar, a key member pivoted thereto, a link pivoted to the key member and to a relatively stationary part of the type-writer, and a spring pressing the parts to normal position.

27. A type-writer finger-wheel, having independent radial spring-fingers, and independent finger members of rubber or its equivalent secured on the fingers and having knobs or raised portions formed integral therewith.

28. In a type-writer, a type-form mounted to turn and provided with upper and lower case letters, and a shifting device acting to give a partial turn to the type to shift from one case to another.

In testimony whereof we have each signed our name to this specification in the presence of two subscribing witnesses.

WILLIAM J. THOMPSON.
PHILIP BECKER.

Witnesses as to the signature of William J. Thompson:

J. L. McAULIFF,
EVERARD BOLTON MARSHALL.

Witnesses as to the signature of Philip Becker:

MATTHEW BRADY,
JOHN J. McEWEN.