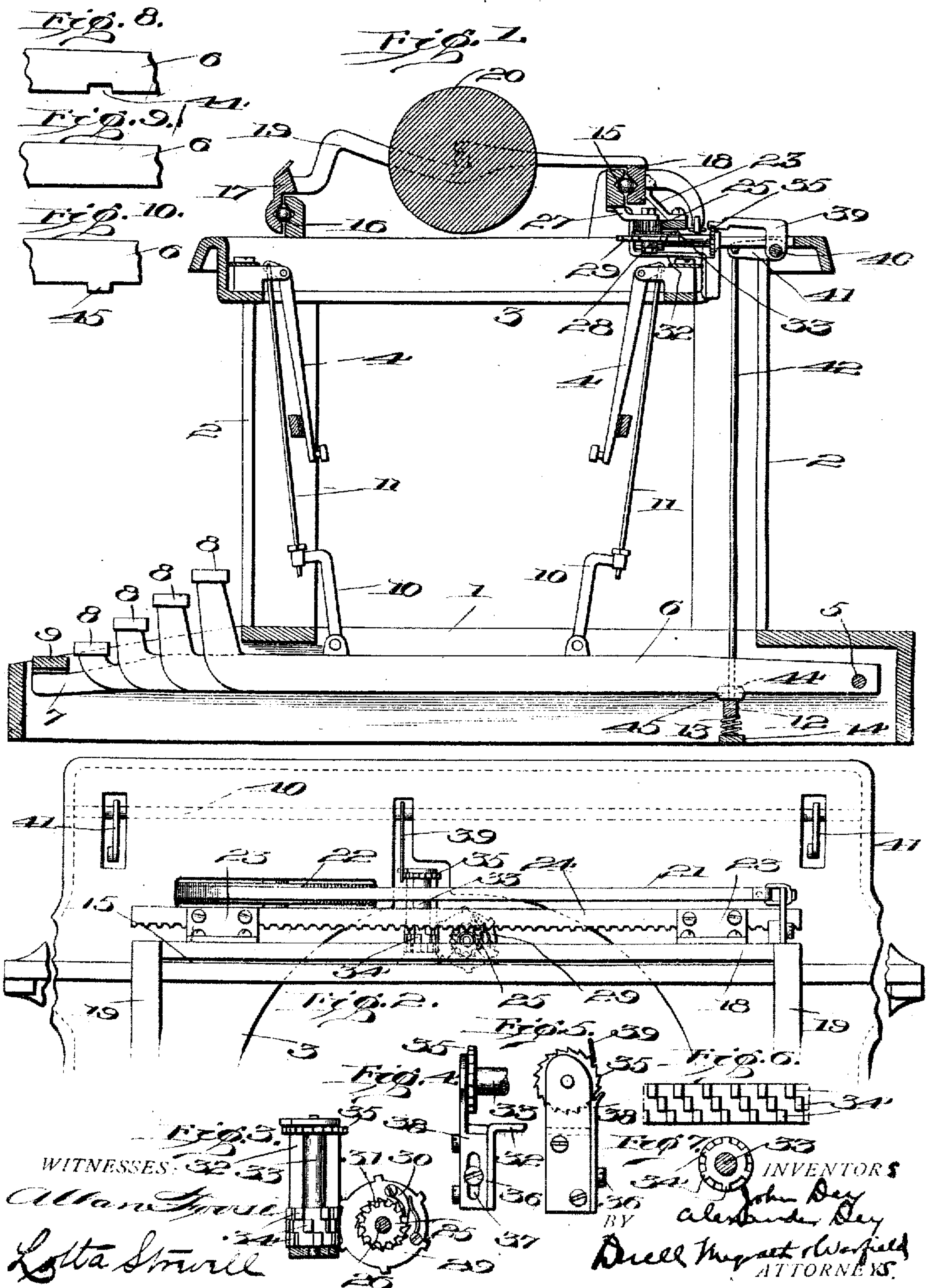


No. 814,119

PATENTED MAR. 6, 1906.

J. & A. DEY.  
TYPE WRITER.

APPLICATION FILED OCT. 20, 1903.





# UNITED STATES PATENT OFFICE.

JOHN DEY, OF SYRACUSE, NEW YORK, AND ALEXANDER DEY, OF  
GLASGOW, SCOTLAND.

## TYPE-WRITER.

No. 814,119.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed October 20, 1903. Serial No. 177,737.

*To all whom it may concern:*

Be it known that we, JOHN DEY, residing at Syracuse, in the county of Onondaga and State of New York, and ALEXANDER DEY, residing at Glasgow, in the county of Lanark, Scotland, have invented certain new and useful Improvements in Type-Writers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to type-writers; and its object is to provide an improvement in the carriage-feed thereof.

In most type-writers as heretofore constructed there has been a serious and acknowledged defect in that the carriage-feed mechanism has been so constructed as to advance the carriage an equal distance for each stroke irrespective of the character of the impression. The result of such construction will be most readily apparent upon considering the relative appearance of the letter combination "mm" in "commence" and "ll" in "till." The "mm" occupies the same space as the "ll" and is cramped in such space, which is comparatively very much more than should be assigned to the "ll" combination.

The present invention proposes a differential spacing for the letters which shall assign to the "m" and "w," which have three legs, their proper space; to the "f," "i," "j," "l," and "t," which have only one leg, their proper space, and to the other letters, which may be said to have two legs, their intermediate and proper space. Such principle of differential spacing will be found useful also not only in differentiating the spaces for various letters as above, but in various other ways, as providing properly-differentiated spaces for various punctuation-marks, spaces between words, the capital letters, and other symbols.

The invention may be said to propose, broadly, a movement of the movable member of the printing-couple of a type-writer or analogous machine whether such movable member is the platen or other element, which movement shall be differentiated in accordance with the letter-key, symbol-key, or other key by the action of which said movement is produced or regulated.

Further objects and advantages of the in-

vention will be in part obvious from the following description and in part pointed out.

The invention accordingly consists in the features of construction, combinations of elements, arrangement of parts, and means for the utilization of principles, which will be hereinafter described and the novel features thereof pointed out in the claims.

In the accompanying drawings, which illustrate an embodiment of the invention, Figure 1 is a sectional view showing conventionally some of the elements of a type-writer with our improved feeding or spacing mechanism applied thereto. Fig. 2 is a top plan, partly broken away, showing the relation between the traveling carriage and the parts by which its movement is produced and regulated. Figs. 3 to 7 are details of various elements. Figs. 8 to 10 are broken details of various forms of key-bars used in carrying out the invention.

Similar reference characters refer to similar parts throughout the several views.

The framework of the machine is shown conventionally as comprising a base 1, standards 2, and ring or top plate 3, supported in the standards and itself supporting the pivoted type-bars 4. Upon a rod 5 at the rear of the base are pivotally mounted the key-bars 6 and the space-bar 7, equipped with the usual type-keys 8 and space-key 9. The key-bars are connected to the type-bars, as shown, by the connecting-rods 10 11, and both the type-bars and space-bar pass over the universal bar 12, normally held in upper position by means of a spring 13, the lower end of which rests upon an abutment or cross-piece connected to the base, as at 14.

On the frame of the machine are supported ways 15 16, in the present instance shown as vertically disposed, with ball-races in their sides, with which coöperate oppositely-disposed ball-races in the sides of guides 17 18, connected to the frame 19 of the reciprocating platen-carriage. On this carriage is mounted the platen 20, and the carriage is connected by a flexible tape or band 21 to the spring-actuated drum 22, such that it is normally under tension tending to feed it along its ways or track.

All the parts thus far described are of the usual construction and are illustrated merely



as an embodiment of one of the many constructions which might be used in connection with various classes of machines in the art of "type-writing," which term is used broadly, and in analogous arts.

The novel features of invention herein reside in the provision of means for feeding or regulating the feed of the carriage, such that it is possible to obtain a differential spacing for the various letters and symbols, and the present embodiment of which will now be described.

Secured to the platen-carriage 19, as by the angle-pieces 23, is a feed-rack 24, which meshes with a pinion 25, loosely mounted upon a stud 26, carried by a bracket 27, secured to some suitable part of the framework, as the way-bar 15. Loosely mounted upon the same stud 26 is a sleeve 28, carrying a toothed wheel 29, which toothed wheel is connected to the pinion 25, so as to rotate therewith in one direction by means of the pawl 30, pivotally mounted upon the toothed wheel and engaging the ratchet-wheel 31, secured to the pinion. Upon the "carriage-return" movement, as it is termed, the pinion may rotate independently of the wheel. Suitably mounted upon the framework of the machine, as by the second bracket 32, secured to the way-bar 15, is a short shaft or spindle 33, preferably arranged, as shown, at right angles to the stud 26 and in the horizontal plane of the toothed wheel 29. This spindle carries at one end and in a position to contact with the teeth of the toothed wheel a series of teeth or stops 34, arranged in three rows longitudinally of the spindle, the distance between successive teeth of any one row being substantially twice the width of the teeth and the teeth in successive rows being staggered in successive steps, as will be clear upon inspection of the drawings, especially the developed view of Fig. 6. On the outer end of the spindle 33 is a ratchet-wheel 35, the number of teeth on which is suitably proportioned to the number of teeth or stops on the other end of the spindle, there being preferably the same number. Carried at the end of the bracket 32 and adjustably mounted thereon, as by a set-screw 36, passing through a longitudinal slot 37, is an adjustable stop 38, by the adjustment of which may be regulated the travel of a spring-pawl 39, by which movement is given to the ratchet and spindle 33. This spring-pawl, which may be of any desired construction, whether made of spring metal or having a pivoted member or members, is connected to be actuated by the movement of the key-bars and space-bar through a connection with the universal bar, and the amount of movement given to said pawl will determine the amount of rotation of the spindle 33, and consequently the particular stop thereon which is brought into

operative position to restrain the movement of the toothed wheel 29 and the feed of the carriage. In the present instance this pawl is shown as mounted upon an intermediate rock-shaft 40, suitably journaled in the framework, said rock-shaft being provided with arms 41 41, projecting therefrom and connected by connecting-rods 42 to the universal bar 12, so as to be rocked thereby.

A differential movement may be given to the universal bar and accordingly to the carriage in many ways, which will be readily suggested. In the present instance the type-bars are so constructed, corresponding to the arrangement of stops in three rows upon the spindle 33, as to cause a movement of the universal bar through one, two, or three units of space, thereby moving the pawl 39 through corresponding units and bringing a stop of the first, second, or third row of the series of stops on the spindle into position to restrain the movement of the toothed wheel, said toothed wheel and carriage-rack being allowed to feed the intervening distance. Such differential movement is given to the universal bar by recessing or cutting out certain of the key-bars, as those which carry keys allotted to and actuating the type-bars equipped with the letters or symbols which require a minimum space, as "l," "t," &c. Such a bar is shown in Fig. 8 recessed at 44. Those symbols which require the medium space are allotted to a type-bar having a straight lower edge, as in Fig. 9, and those that require an extra space, as "m" and "w," have their key-bars provided with a depending lug or web, as at 45, Fig. 10, said lugs, as well as the recesses, being disposed above the universal bar, so that they will determine the amount of movement which will be given to said bar upon the actuation of the keys.

The operation should be clear to those skilled in the art from the description already given, but may be briefly summarized. Upon striking a key, as the letter "m," the key-bar of which, as in Fig. 10, is provided with a depending lug, the universal bar and pawl 39 will be drawn down to a distance equal to three teeth of the ratchet 35, and the spindle 33 will be revolved so as to carry the stop which is in contact with the toothed wheel 29 away from the tooth on said wheel and allow the wheel to revolve until it has passed the two succeeding stops, and its further motion is restrained by contact between the next stop and one of the teeth of the wheel. If a different key is struck, the pawl 39 will be moved to turn the ratchet-wheel to the distance of one or two teeth, and the carriage will be permitted a corresponding spacing-feed.

The toothed wheel is under constant rotary tension from the spring-drum, and it is found that as the spindle 33 is revolved it carries the stops away from the path of the teeth on the



wheel, and the motion of such wheel is steady and practically continuous so long as the motion of the spindle continues. Thus while apparently the motion of the toothed wheel is one of dropping from one of the stops to the next it is practically a continuous steady motion, such as is desirable in machines of this class.

It will be obvious that very many changes may be made in the details of this invention both with regard to the elements which constitute the essence of the invention and the elements associated therewith in use. We do not desire to limit ourselves to any particular kind of type-writer or analogous machine, whether it is of the type-bar class, the key-wheel class, or any other class, nor to any particular construction of means for taking the impression or for causing or regulating the feeding movement, as the present invention may be embodied in a great variety of constructions which would still attain the advantages and utilize the principles here suggested or disclosed. As a specific instance it may be noted that the character of the element connected to be actuated with the traveling carriage, in the present embodiment the toothed wheel, and of the stops which cooperate with said elements in determining the extent of feed of the carriage is quite immaterial so long as they embody the feature of stops adapted to cooperate with the carriage to permit a differential-spacing feed thereof. While we have described a construction which provides for three different feeding movements, one of which is taken as the unit and is assigned to certain letters, it will be obvious that any desired number of feeding movements differing in extent might be provided for, which feeding movements could be made up of any desired number of units and the units proportioned to various letters in any desired ratio, as under certain circumstances it might be desirable to cause a feeding movement equivalent to two units for some of the letters, as the letter "l," one of three units for some of the letters, as the letter "a," and one of four units for some of the letters, as the letter "m."

Specific advantages of the invention which may be noted in addition to those which will be obvious reside in the improved appearance of the copy where such a differential-spacing mechanism is used and in the greater scope which may be allowed in the selection of type as to form, size, and arrangement.

Throughout the specification and claims it is to be understood that the terms which are used for the purpose of describing the invention are used with a full knowledge of the wide range of equivalents due to the present development of the art to which this invention relates, and such terms are accordingly to be interpreted in a descriptive and not a limiting sense.

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

1. In a type-writer, in combination, a platen mounted for traveling movement upon suitable ways, a series of type elements, a series of keys connected to control said type elements, means for putting said platen under tension tending to feed it past the printing-point, a member connected to be rotated upon movement of said platen, a series of rotatably-mounted stops adapted to be interposed in the path of rotation of said member to restrain the rotation thereof and movement of the platen, means for releasing said restrained member from the control of said stops upon the actuation of the keys, and means dependent upon the particular key which is actuated for determining the distance through which said member will rotate before its rotation is again restrained by one of said stops.

2. In a type-writer, in combination, a platen, a series of type elements, a series of keys connected to control said type elements, means for putting said platen under tension tending to feed it past the printing-point, a rotary element connected to be rotated as said platen is fed forward, rotatably-mounted means for preventing the rotation of said element, means common to the keys for releasing said element to allow rotation thereof, and means dependent upon the particular key which is actuated for determining the arc through which said rotary element shall move upon any given actuation.

3. In a type-writer, in combination, a platen, a series of type elements, a series of keys controlling said type elements, means for feeding said platen past the printing-point, a rack carried with said platen, a pinion meshing with said rack, a toothed wheel mounted for rotation with said pinion, a member having a series of stops fixed thereon adapted to be successively interposed in the path of the teeth on said wheel, and a selective device controlled by the keys for determining which of said stops is so interposed.

4. In a type-writer, in combination, a platen, a series of type elements, a series of keys controlling said type elements, means for feeding said platen past the printing-point, a rack carried by said platen, a pinion meshing with said rack, a toothed wheel connected to said pinion to rotate therewith, a shaft carrying a series of rows of stops adapted to be interposed in the path of the teeth on said wheel, the stops on successive rows being staggered with relation to those on adjacent rows, a ratchet carried by said shaft, an actuating-pawl for said ratchet, a universal bar connected to actuate said pawl, and means whereby said universal bar may be given movements of different extent as different keys are struck.



5. In a type-writer, in combination, a platen, a series of type elements, a series of keys controlling said type elements, means for feeding said platen past the printing-point, a rack carried by said platen, a pinion meshing with said rack, a toothed wheel connected to said pinion to rotate therewith in one direction, a shaft carrying a series of rows of stops adapted to be interposed in the path of the teeth on said wheel, the stops on successive rows being staggered with relation to those on adjacent rows, a ratchet carried by said shaft, an actuating-pawl for said ratchet, a universal bar connected to actuate said pawl, and means whereby said universal bar may be given movements of different extent as different keys are struck.

6. In a type-writer, in combination, a platen, a series of type elements, a series of keys controlling said type elements, means for feeding said platen past the printing-point, a rack carried by said platen, a pinion meshing with said rack, a toothed wheel connected to said pinion to rotate therewith, a shaft carrying a series of rows of stops adapted to be interposed in the path of the teeth on said wheel, the stops on successive rows being staggered with relation to those on adjacent rows, an actuating-pawl for said ratchet, a stop for limiting the movement of said pawl, a universal bar connected to actuate said pawl, and means whereby said universal bar may be given movements of different extent as different keys are struck.

7. In a type-writer, in combination, a series of type elements, a series of keys controlling said type elements, a platen, means for feeding said platen past the printing-point, a rack carried by said platen, a pinion meshing with said rack, a toothed wheel connected to said pinion to rotate therewith, a shaft carrying a series of rows of stops adapted to be interposed in the path of the teeth on said wheel, the stops on successive rows being staggered with relation to those on adjacent rows, a ratchet carried by said shaft, an actuating-pawl for said ratchet, and a universal bar connected to actuate said pawl, said universal bar being actuated by the key-bars, the meeting faces of said universal bar and key-bars being differently shaped to give different movements of said universal bar upon actuation of different keys.

8. In a type-writer, in combination, type-keys, a universal bar with which said keys are adapted to engage, a rock-shaft, a lever fixed to said shaft, connections between said universal bar and said lever, a second lever fixed upon said rock-shaft, a platen, means whereby said platen is given a movement corresponding to the angle through which said second-mentioned lever is turned, and means whereby said universal bar is given a movement varying in extent with the shape of the

particular key forced into engagement therewith.

9. In a type-writer, in combination, a platen, a carriage upon which said platen is mounted, a rack upon said carriage, a pinion engaging said rack, a toothed wheel in fixed relation to said pinion, a series of rotatably-mounted stops operatively positioned with respect to said toothed wheel, type-keys, means whereby said stops are actuated upon the depression of said type-keys, and means whereby the extent of movement of said stops is determined by the particular type-key depressed.

10. In a type-writer, in combination, a platen, a carriage upon which said platen is mounted, a rack upon said carriage, a pinion coacting with said rack, a toothed wheel fixed upon the shaft of said pinion, a series of movable stops in operative relation with said toothed wheel, a ratchet-wheel whereby said stops are moved, type-keys, a universal bar, and means whereby said ratchet-wheel is actuated upon the depression of one of said type-keys the range of movement of said ratchet-wheel and the stop brought into operative relation with said toothed wheel depending upon the particular key depressed.

11. In a type-writer, in combination, a platen, a carriage upon which said platen is mounted, a rack upon said carriage, a pinion coacting with said rack, a toothed wheel fixed upon the shaft of said pinion, a series of movable stops in operative relation with said toothed wheel, a ratchet-wheel whereby said stops are moved, type-keys, a universal bar, and means whereby said ratchet-wheel is actuated upon the depression of one of said type-keys the range of movement of said ratchet-wheel and the stop brought into operative relation with said toothed wheel depending upon the shape of the particular key depressed.

12. In a type-writer, in combination, a platen, a carriage upon which said platen is mounted, means for putting said carriage under tension tending to feed it past the printing-point, means adapted to be rotated by the movement of said carriage, a series of rotatably-mounted, independent, relatively fixed stops adapted to be interposed in the path of said means to restrain the rotation thereof and movement of the carriage, a series of keys, and means under control of said keys adapted by an operation upon said series of relatively fixed stops to determine the rotation of said second-mentioned means.

13. In a type-writer, in combination, a platen, a carriage upon which said platen is mounted, means for putting said carriage under tension to feed it past the printing-point, means adapted to be rotated by a movement of said carriage, a series of rotatably-mounted, independent, relatively



fixed stops adapted to be interposed in the path of said means and restrain the rotation thereof and movement of the carriage, a series of keys, and means dependent upon the shape of the particular key depressed adapted by an operation upon said series of relatively fixed stops to determine the amount of rotation of said second-mentioned means.

14. In a type-writer, in combination, a carriage, means for putting said carriage under tension to feed it past the printing-point, a series of type elements, a series of keys connected to control said type elements, means adapted to be rotated by a movement of the carriage, a member comprising a series of independent stops adapted to restrain a rotation of said rotatable means, and means controlled by said keys adapted to actuate said restraining member to determine the amount of rotation of said aforementioned rotatable means, and means controlled by said keys adapted to actuate said restraining member to determine the amount of rotation of said aforementioned rotatable means.

15. In a type-writer, in combination, a carriage, means for putting the same under tension tending to feed it past the printing-point, means adapted to be rotated by a movement of the carriage, a series of type elements, a series of keys connected therewith, a rotatable member, a series of relatively fixed, independent stops positioned upon said rotatable member, each of said

stops being adapted to restrain a movement of said second-mentioned means when engaged therewith, and means for rotating said member to disengage one of said stops from said second-mentioned means and allow a rotation thereof, the extent of said rotation being determined by the engagement thereof with another of said stops.

16. In a type-writing machine, in combination, a carriage, means for putting the same under tension tending to feed it past the printing-point, means adapted to be rotated by a movement of the carriage, a series of type elements, a series of keys connected therewith, a rotatable member, a series of relatively fixed, independent stops positioned upon said member, each of said stops being adapted to restrain a movement of said second-mentioned means when engaged therewith, and means controlled by said keys for rotating said member to disengage one of said stops from said second-mentioned means to allow a rotation thereof and movement of the carriage, the extent of said rotation being determined by the shape of the particular key depressed.

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

JOHN DEY.  
ALEXANDER DEY.

Witnesses:

CARRIE M. JUNE,  
C. E. McDONALD.