

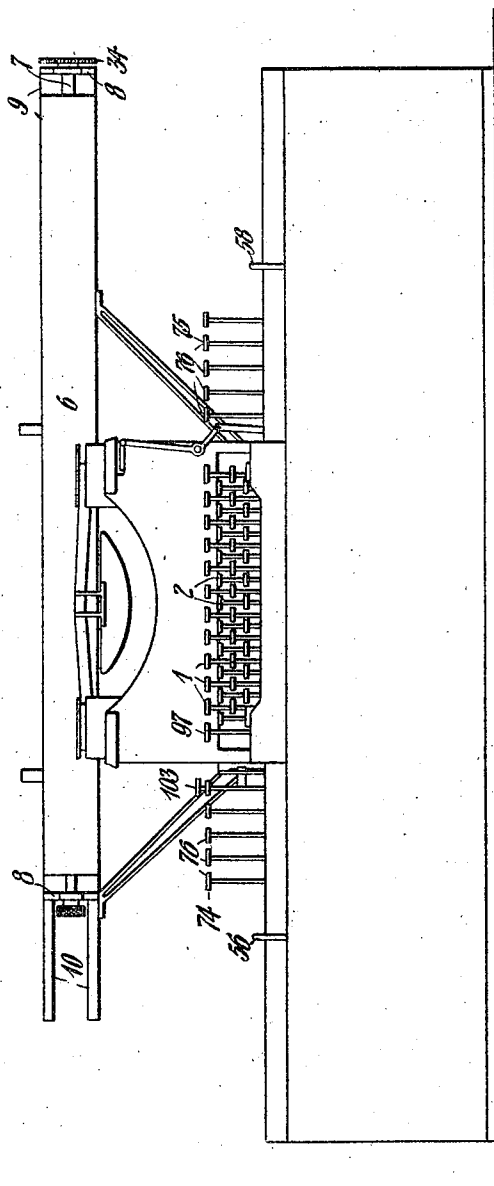
S. E. CARLIN.
TYPE WRITING MACHINE.
APPLICATION FILED FEB. 25, 1913.

1,133,004.

Patented Mar. 23, 1915.

8 SHEETS—SHEET 1.

FIG. 1



WITNESSES:

J. A. Brophy
Arthur H. Innes

INVENTOR:

Samuel E. Carlin

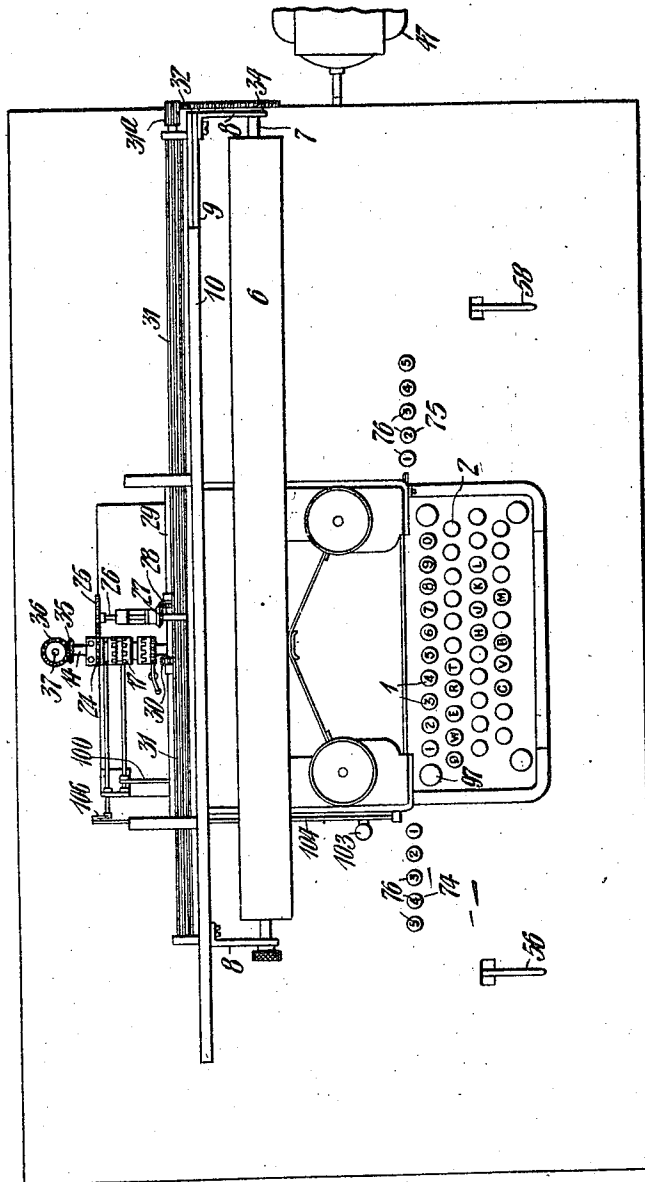
BY

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1,133,004.

8 SHEETS-SHEET 2.

FIG. 2.



J. A. Prophecy
Letter H. Irons.

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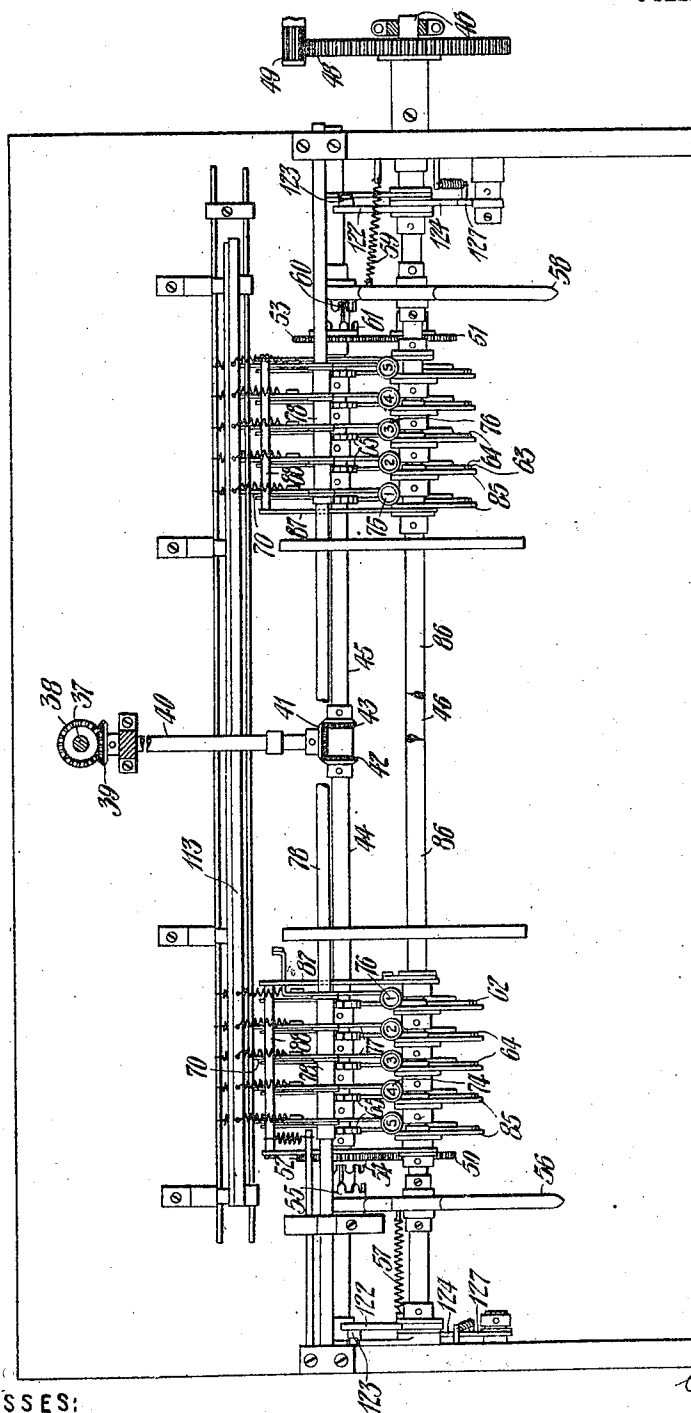
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8 SHEETS—SHEET 3.

FIG. 3.



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8 SHEETS—SHEET 4.

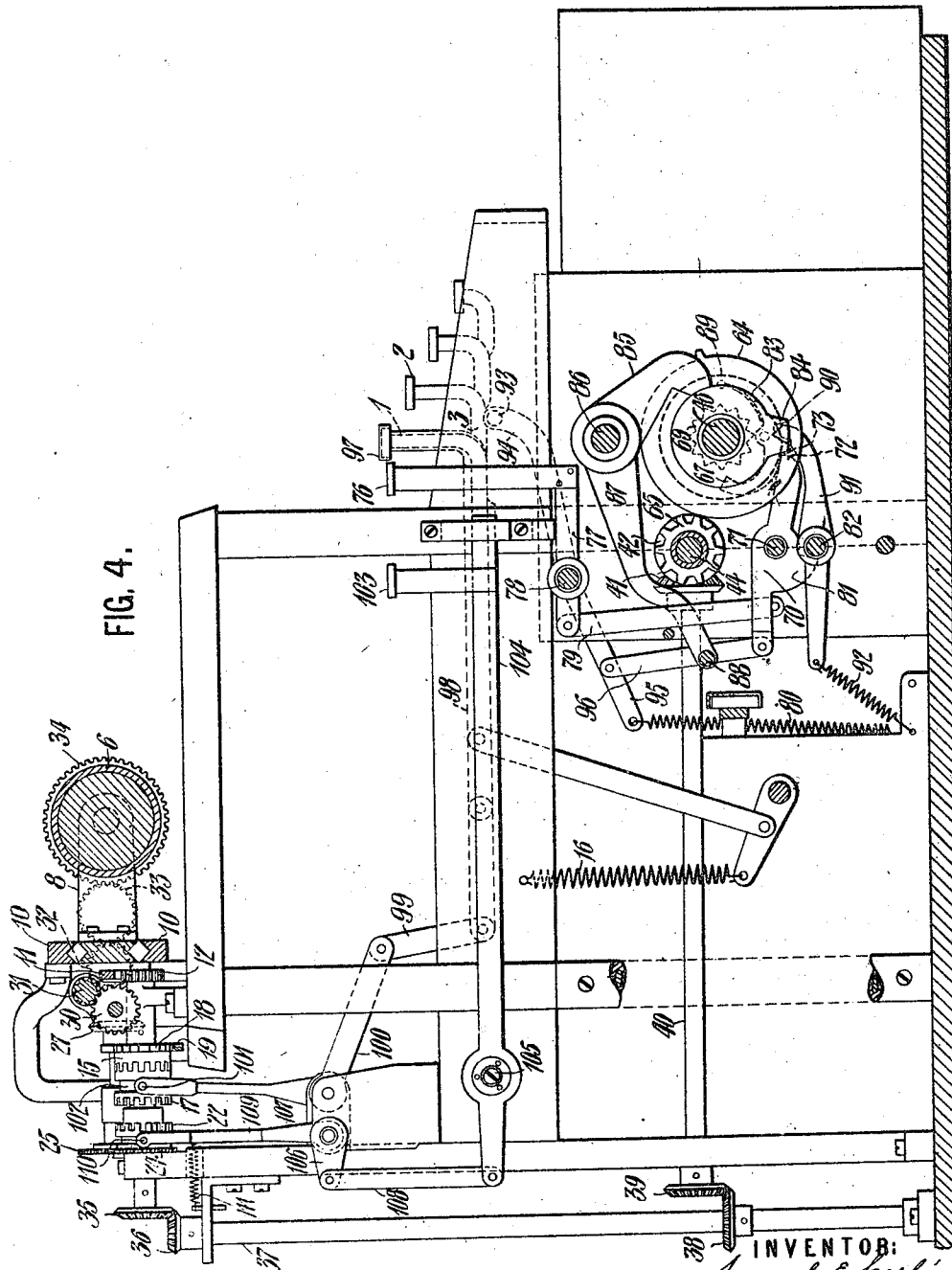


FIG. 4.

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8 SHEETS-SHEET 5.

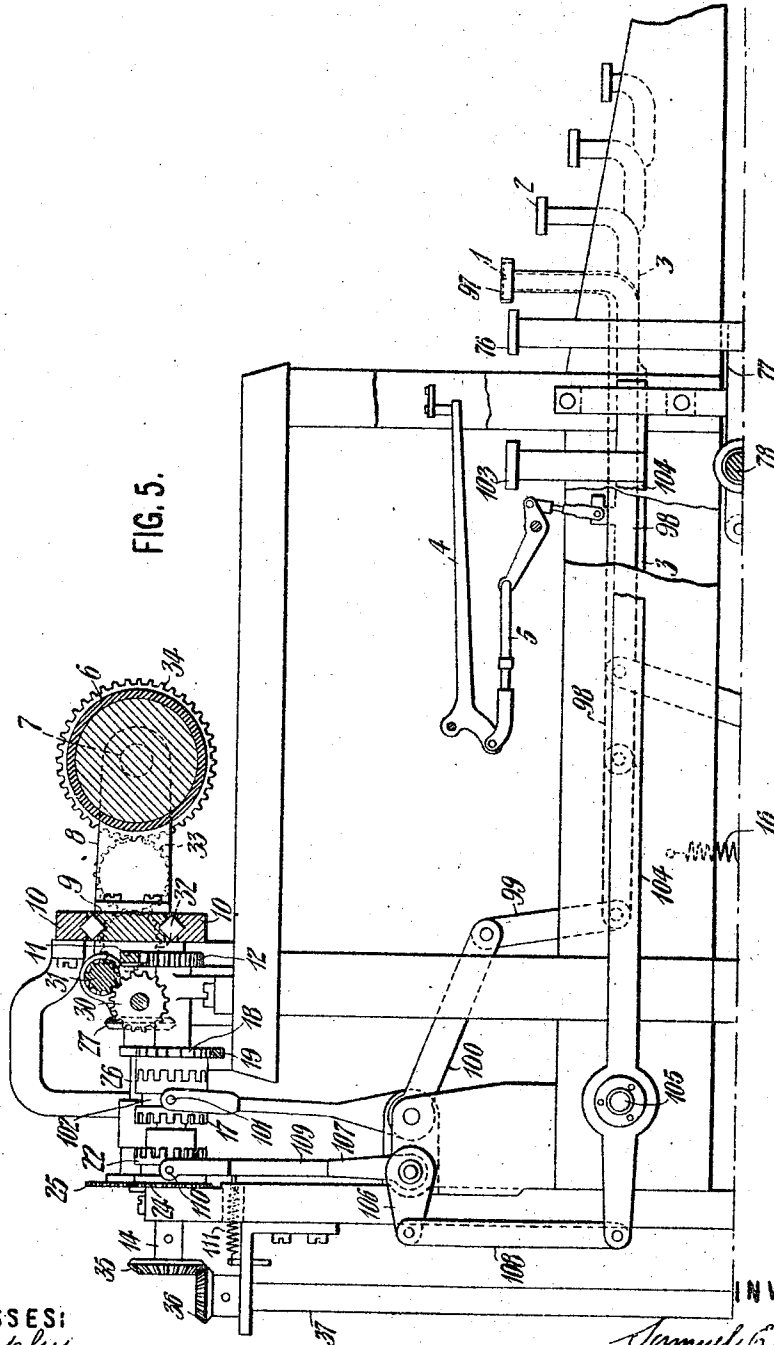


FIG. 5.

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8 SHEETS-SHEET 6.

FIG. 6.

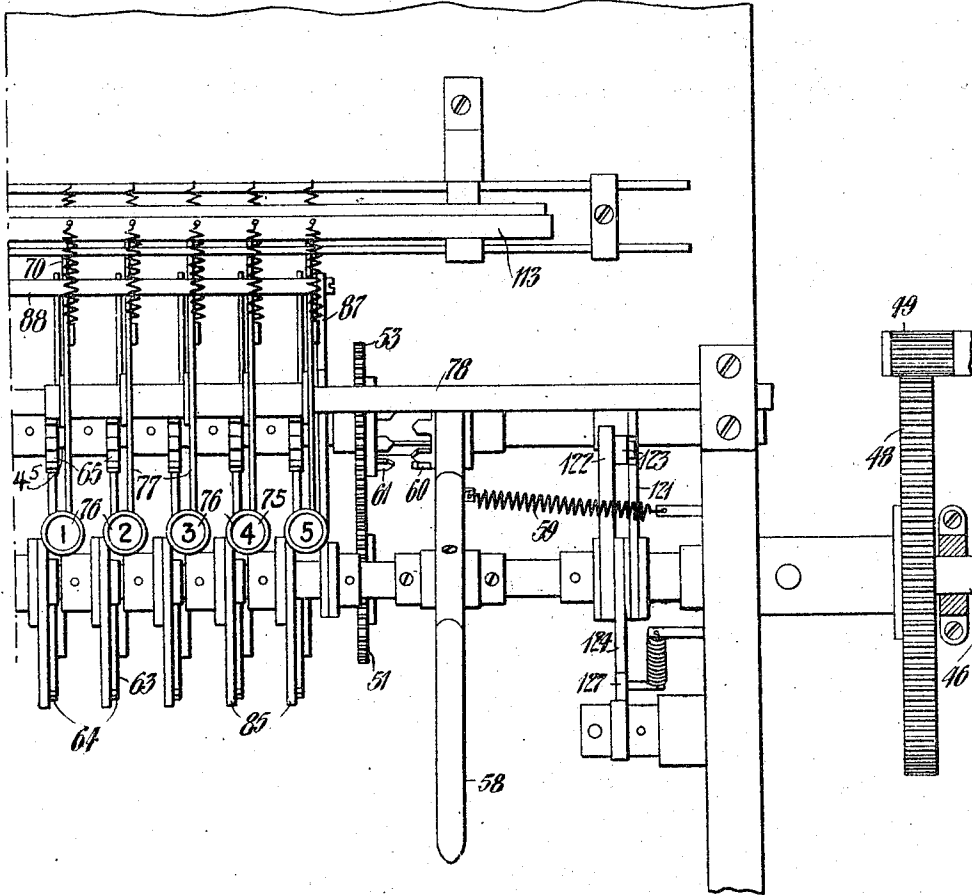
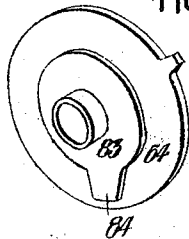


FIG. 7.



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1,133,004.

Patented Mar. 23, 1915.

8 SHEETS—SHEET 7.

FIG. 8.

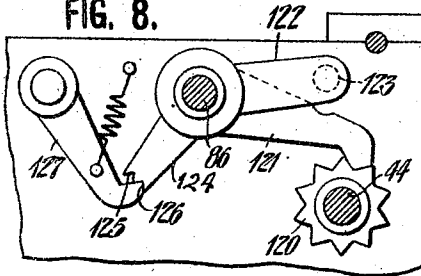


FIG. 9.

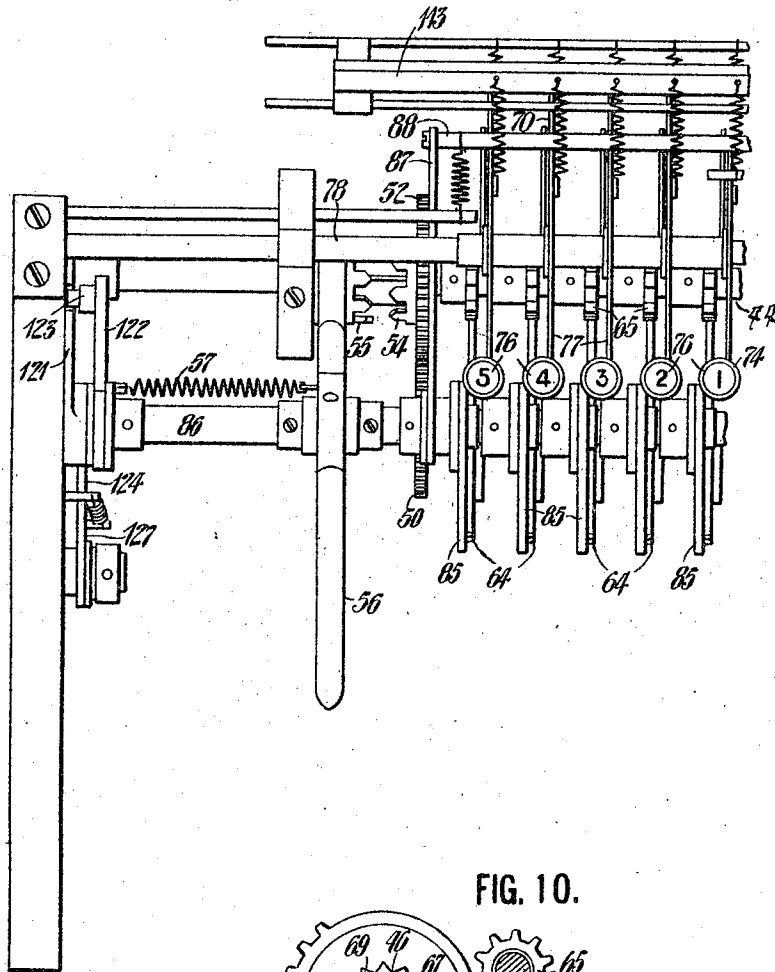
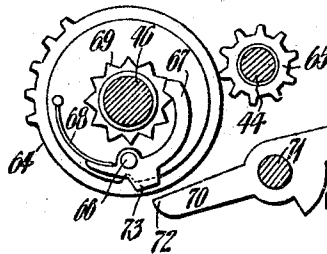


FIG. 10.



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1,133,004.

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8 SHEETS-SHEET 8.

FIG. 11.

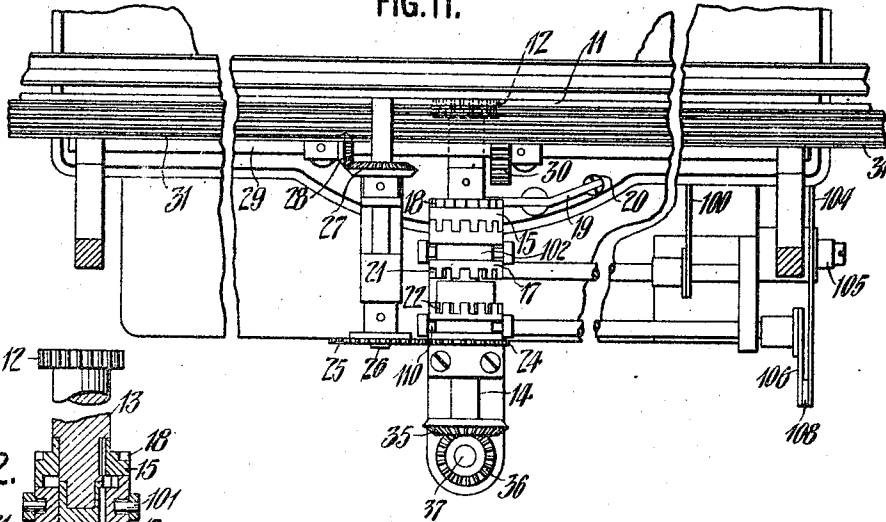


FIG. 12.

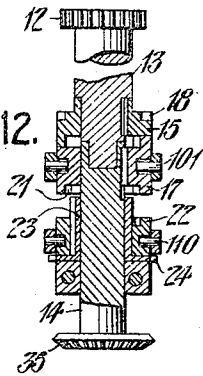


FIG. 14.

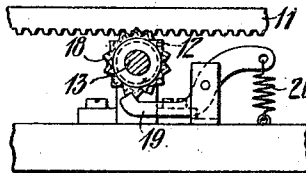


FIG. 13.

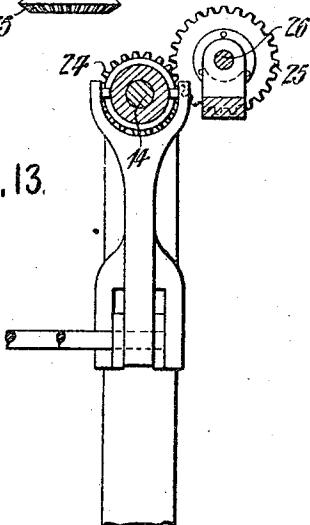
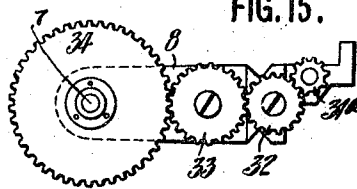


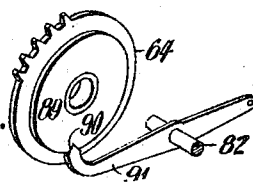
FIG. 15.



WITNESSES:

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FIG. 16.



INVENTOR:

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UNITED STATES PATENT OFFICE.

SAMUEL E. CARLIN, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNDERWOOD COMPUTING MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,133,004.

Specification of Letters Patent.

Patented Mar. 23, 1915.

Original application filed June 26, 1909, Serial No. 504,595. Divided and this application filed February 25, 1913. Serial No. 750,514.

To all whom it may concern:

Be it known that I, SAMUEL E. CARLIN, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

in a series differs from its fellows in the number of teeth which it has, the difference being arranged successively, starting with a mutilated gear of one tooth and continuing through mutilated gears of two, three, four and five teeth, corresponding to the same number of line-space movements of the platen.

A still further feature of this invention is to provide a selective means for controlling the effectiveness of the drive from the motor to the platen at a point other than those above mentioned. This is accomplished by having the train of driving connections normally inactive at a point intermediate the controlling mechanism and the platen but manipulated by a key at the keyboard to bring about an effective connection.

Other features and advantages will hereinafter appear.

In the accompanying drawings Figure 1 is a front view in elevation. Fig. 2 is a top plan view. Fig. 3 is a skeleton plan view with some of the superposed parts removed to show the underlying structure. Fig. 4 is a vertical section taken from front to rear of the machine. Fig. 5 is a vertical section taken from front to rear of the top of the machine, showing more particularly the type action. Fig. 6 is an enlarged fragmentary top plan view of the right-hand end of the machine showing the series of keys which controls the spacing of the carriage to the right or in a return direction, and the movement of the platen backwardly or in a back-spacing direction. Fig. 7 is a perspective view of one of the mutilated gears with its cam, and more particularly the mutilated gear which controls a single step-spacing movement. Fig. 8 is a fragmentary vertical section of the left-hand end of the machine, showing one of the detents for preventing overthrow of one of the drive shafts. Fig. 9 is a view similar to Fig. 6 but taken of the left-hand portion of the machine. Fig. 10 is a detail vertical section showing the relation of one of the mutilated gears to the gear and shaft which it drives, with the means for clutching the mutilated gear to the continuously-rotating shaft. In this instance, the gear shown is the five-tooth gear

This invention relates to an improvement in typewriting machines, and more especially to mechanism whereby the platen can be rotated from a source of power, and is a division of my application, No. 504,595, filed June 26, 1909.

A feature of this invention is the provision of means whereby the platen can be rotated an undetermined amount either forwardly in a normal line-spacing direction or backwardly in a reverse direction from a source of power. This may be accomplished by the provision of driving connections between the platen and a source of power, which are normally inactive but rendered active or effective by the mere manipulation of one of two levers, whereby the platen can be driven continuously in one direction or the other according to the particular lever actuated, and for an amount depending on the time which the lever is held in its position corresponding to the continuous driving connection between the motor and the platen.

A further feature of this invention is the provision of mechanism whereby the platen can be rotated not only for an undetermined distance but also for a plurality of predetermined line spaces, and that, too, either in a normal line-spacing direction or in a reverse direction. For this purpose, the driving connection between the motor and the platen can be rendered effective at two series of different points, one series corresponding to a rotation of the platen in one direction, and the other corresponding to a rotation of the platen in the opposite direction. Each point of connection in a series controls a different extent of movement of the platen. This difference is obtained by providing mutilated gears, which are normally disconnected from the source of power and are connectible thereto. Each mutilated gear

corresponding to a five-step movement of the platen or carriage. Fig. 11 is an enlarged top plan view showing the clutching arrangement whereby the selection may be made between rotating the platen and traversing the carriage. Fig. 12 is a horizontal section of the clutch mentioned in connection with Fig. 11. Fig. 13 is a vertical section through the clutch shown in Figs. 11 and 12. Fig. 14 is a fragmentary detail view in elevation showing the justifying detent for accurately determining the stopping position of the carriage after having been traversed either to the right or to the left. Fig. 15 is a detail view in side elevation, showing the gearing connection between the elongated barrel gear and the gear on the platen. Fig. 16 is a detail perspective view of one of the mutilated gears, showing the notched disk whereby it is caught against overthrow.

Referring more particularly to the separate parts of this invention as embodied in the form shown in the drawings, 1 indicates numeral keys and 2 alphabet or character keys, which when depressed force down key levers 3 (Fig. 5) to swing type bars 4, through the intermediary or linkages 5, rearwardly up against the front side of a platen 6, mounted to rotate by means of an axle 7 extending in bearings 8 on a carriage 9. The carriage 9 is mounted between guideways 10, so as to be capable of traveling from left to right of the machine.

In order to traverse the carriage 9 either to the left or right, there is provided on the rear thereof, a rack 11, which is driven by a pinion 12 on a shaft 13 (Figs. 11, 12 and 13). The shaft 13 may be driven from a shaft 14, which is aligned therewith, but the shafts 13 and 14 are not directly or rigidly connected together.

To enable a driving connection between the shafts 13 and 14, there is secured on the shafts 13, a clutch element 15, into mesh with which is normally held by a spring 16 (Figs. 4 and 5), a sliding clutch 17, which is splined on the shaft 14. In passing, it may be noted that the clutch element 15 (Figs. 12 and 14) is provided with a detent ratchet wheel 18, into engagement with which is normally forced a justifying detent 19, by means of a spring 20. This detent-and-ratchet arrangement enables the accurate positioning of the carriage for any letter space after the carriage has been moved either to the right or to the left.

It is to be noted that the clutch element 17 is double-faced, that is to say, in addition to having clutch teeth which engage the clutch teeth of the clutch element 15, there are also provided on the opposite side, clutch teeth 21, whereby a mutual engagement may be brought about between the clutch element 17 and a clutch element 22 which is splined

on a hub 23, the latter, however, being loosely mounted on the shaft 14. When there is a mutual engagement between the clutch element 17 and the clutch element 22, then the hub 23 will be driven from the shaft 14. The hub 23 has formed or secured thereon, in any suitable manner, a gear 24 (Figs. 11 and 12), which meshes with a gear 25 on a parallel shaft 26. The latter extends forwardly where it is provided with a bevel gear 27 meshing to drive a companion bevel gear 28 on a shaft 29. The shaft 29 has secured thereon, at a point corresponding to the printing point of the typewriter, a pinion 30, which meshes with a long barrel gear or pinion 31 mounted to rotate on the carriage 9. The elongated barrel gear 31 is at least as long as the platen 6, so that it will be in mesh with the pinion 30 just so long as any point of the platen is opposite to the printing point of the typewriter. The barrel gear 31 is connected to rotate the platen 6 through a train of gears (Figs. 2 and 15), comprising a pinion 31^a, forming an extension or continuation of the barrel gear 31, idlers 32 and 33, and a gear 34 secured to the axle 7 of the platen 6. It will thus be seen that when the shaft 14 is rotated and the clutch element 17 is interlocking with the clutch element 15, then the pinion 12 will be rotated so as to traverse the carriage 9 to the right or left according to the direction of rotation of the shaft 14. If, on the other hand, the clutch element 17 is disconnected from the clutch element 15 and interlocking with the clutch element 22, then the barrel pinion 31 will be rotated so as to rotate the platen either forwardly, or backwardly, according to the direction of rotation of the shaft 14. Of course, if it is so desired, inasmuch as the clutch elements 17 and 22 are both splined for relative movement while yet connected in driving relation with the parts on which they are splined, a concomitant traveling movement of the carriage and rotating movement of the platen may be obtained.

It will now be shown how the shaft 14 obtains its rotation.

The shaft 14 has secured at its rear end, a bevel gear 35 (Fig. 11), which meshes with a companion gear 36 on a vertical shaft 37, having, at its lower end, a bevel gear 38 meshing with a like gear 39 on a forwardly-extending shaft 40, which for purpose of distinction may be termed a counter-shaft. On the front end of the shaft 40, there is provided a bevel gear 41 (Figs. 3 and 4), which meshes with a pair of oppositely-facing bevel gears 42 and 43, so as to be alternatively driven thereby in a direction corresponding to whichever of the gears 42 or 43 is driving it. The gears 42 and 43 are secured to abutting but relatively movable shafts 44 and 45, respectively. The shafts

44 and 45 may be alternately driven from a continuously rotating shaft 46, which receives its drive from a motor 47 through the intermediary of a gear 48 on the shaft 46 and a pinion 49 on the motor shaft.

If it is desired to have an undetermined movement of the shaft 14 and thus of the platen or carriage, the shaft 44 or 45 may be selectively connected in driven relation with the shaft 46 for a continuous undetermined period of time. To accomplish this, there is secured on the shaft 46, adjacent opposite ends thereof, gears 50 and 51 (Fig. 3), which mesh, respectively, with gears 52 and 53 loosely mounted, respectively, on the shafts 44 and 45. To secure the gear 52 (Fig. 9) to the shaft 44, this gear is provided with a clutch element 54, into engagement with which may be brought a clutch element 55, which is splined on the shaft 44 and movable from a normal disconnected position, by a controlling lever 56, to a connected position against the tension of a spring 57, which normally holds these clutch elements disconnected. For convenience, the control lever 56 being located at the left, is used to control a traveling movement of the carriage to the left, and correspondingly, a normal or forward line-space movement of the platen. On the other hand, if it is desired to have either a return movement of the carriage or a reverse movement of the platen, a control lever 58 (Figs. 3 and 6) may be manipulated against the tension of a spring 59, to bring a clutch element 60, which is splined on the shaft 45, into locking engagement with a clutch element 61, secured to the gear 53, which is loosely mounted on the shaft 45. Such an arrangement will cause a continuous drive of the shaft 45 from the shaft 46, just so long as the clutch elements 60 and 61 are held in meshing engagement with each other.

In addition to the provision for an undetermined movement of either the platen or the carriage, provision is also made for a predetermined movement thereof in either one direction or the other. For this purpose, there are provided on the shaft 46, two series 62 and 63 of mutilated gears 64, which are normally disconnected from the continuously rotating shaft 46 but connectible thereto. The gears in each series have varying numbers of teeth starting with a mutilated gear with but one tooth (Fig. 7) and continuing successively with mutilated gears of two, three, four, and in this instance five teeth (Fig. 10), corresponding, respectively, to one, two, three, four and five step movements of the platen or the carriage. The series 62 controls the spacing of the carriage to the left, and the series 63 controls the spacing of the carriage to the right. Likewise, the series 62 controls normal or forward line-space movements of the platen,

and the series 63 controls the reverse or backward movement of the platen.

When connected to the shaft 46 so as to rotate therewith, each mutilated gear is arranged to drive a pinion 65, arranged in position thereto, an amount corresponding to the number of teeth on the particular mutilated gear. There is one of these pinions 65 secured on the shaft 44 for each mutilated gear in the series 62. There is likewise one of these pinions 65 on the shaft 45 for each of the mutilated gears in the series 63.

To bring about the connection of the mutilated gears in locked relation with the shaft so that they will rotate therewith, each of these mutilated gears has pivotally mounted thereon, as at 66 (Fig. 10), a clutching pawl 67, which is normally urged by a spring 68, so as to tend to engage a clutch star or ratchet wheel 69, secured on the shaft 46 in juxtaposition with each of the mutilated gears. Each of the clutching pawls 67, however, is normally held out of engagement with its associated star wheel 69 against the tension of the spring 68, by means of a tripper or trigger 70 (Fig. 4) pivotally mounted on a shaft or rod 71 and having a toe 72 engaging a lug 73 on the associated pawl 67.

To release any one of the clutching pawls 67, it is necessary to rock the associated tripper or trigger 70 about its pivot, to bring the toe 72 thereof out of engagement with the lug 73. To accomplish this, there are provided two series 74 and 75 of keys 76 (Figs. 3, 6 and 9), which control, respectively, the connection of the mutilated gears of the series 62 and 63 to the shaft 46. Each key 76 is mounted on a bell crank lever 77 (Fig. 4), which is pivotally mounted on a shaft 78, so that when a key 76 is depressed, it will rock the bell crank to pull up on an associated link 79, which is connected to rock the associated tripper or trigger 70 against the tension of a spring 80. Each tripper or trigger is limited in its return movement by an enlargement 81 thereon engaging a transverse rod 82.

It will be noted after each depression of one of the keys 76, that the associated mutilated gear should be connected to the shaft 46 but for a single rotation. While the spring 80 might be depended upon to accomplish this, it is desirable to provide positive means for insuring the movement of the trippers or triggers 70 into the path of the lugs 73, to insure the disconnection of the clutches 67 from the associated star wheel 69. To accomplish this, each of the mutilated gears has secured thereto, so as to rotate therewith, a cam disk 83 having a cam 84 thereon, which is so located with respect to the teeth of the mutilated gear that it will come into play subsequent to the action

of the teeth near the end of a single rotation of the mutilated gear. This cam engages a cam lever 85, of which there is one provided for each mutilated gear, so as to rock the same and thus rock a common shaft 86 to which all of the cam levers 85 are secured. The rock shaft 86 has also secured thereon, two pairs of arms 87, each pair of which is connected by a transverse universal bar 88 arranged to overlie the tails of all of the trippers or triggers 70. Thus, when any one of the mutilated gears has been connected to rotate with the shaft 46, the shaft 86 will be rocked near the end of the rotation of the particularly mutilated gear, so as to depress the universal disconnecting bars 88, and thus force whichever tripper or trigger may have been rendered ineffective, to its effective tripping position. In order to prevent overthrow of the mutilated gears, they are each provided with a locking disk 89 (Fig. 16), having a notch 90, into engagement with which is urged, by means of a spring 92, at the end of the rotation of the corresponding mutilated gear, a detent 91, pivotally mounted on the rod 82. The rock shaft 86 also prevents overthrow of the shafts 44 and 45. For this purpose, these shafts are provided, at their opposite ends, with individual star or ratchet wheels 120 (Figs. 3 and 8), which are secured thereto and provided with the same number of teeth as the gears 65. Each of these star wheels 120 may be engaged by a detent 121, loosely mounted on the rock shaft 86. There are secured to the rock shaft 86, two arms 122, one for each of the detents 121. These arms are each provided with a pin 123 overlying the associated detent 121, so that when the shaft 86 is rocked, to bring about a positive return movement of the trippers or triggers 70, then the detents 121 will also be positively forced into engagement with their associated star wheels 120, to lock the shafts 44 and 45 in whatever position they may have been driven to. To a certain extent, these detents 121, having each a wedge toe engaging between the bevel teeth of the adjacent star wheel 120, act as justifying members. Each detent 121 is provided with a second arm 124, having a pair of notches 125 and 126 therein, which are engaged by a spring-pressed dog 127, which yieldingly holds the associated detent in either of its adjusted positions in or out of engagement with the associated star wheel 120.

It is, of course, desirable to enable a spacing of the carriage when any of the character keys 2 are struck, so as to bring the next letter space of the work-sheet opposite to the printing point. For this purpose, there is provided, underlying all of the key levers 3 for the alphabet keys 2, a universal bar 93, which joins a pair of arms 94 loosely mounted on the shaft 78. One of the arms

94 extends beyond the shaft 78, as at 95, where it is provided with a link 96 connecting it to the tripper or trigger 70 (Fig. 4) which corresponds with and controls the mutilated gear 64 in the series 62 which has but a single tooth corresponding to a single step movement of the carriage 9 in a travel to the left, that is, in a letter-feeding direction. The universal bar 93 and connected parts are returned after actuation to their normal position by one of the springs 80. It will be noted at this point, that the link 79 for the key 76, which also controls the activity of the particular mutilated gear 64 just mentioned, has a loose connection with the trigger 70, so as to permit the actuation of the trigger 70 by any of the alphabet keys 2, without a corresponding movement of this particular key 76.

As has been stated above, the movement of the platen or of the carriage is selective. The arrangement whereby this selection is made will now be described.

The shifting of the clutch 17 which controls the effectiveness of the driving connection to the carriage-traversing gear 12, is controlled from a key 97 (Figs. 2 and 5) arranged in juxtaposition to the character keys of the typewriting mechanism. This key is mounted on a lever 98, which is pivoted intermediate its ends and connected by a link 99, to rock a bell crank shifting lever 100, which is forked at its other end and provided with pins 101, which engage in an annular groove 102 in the clutch 17. The clutch element 22 is also controlled by a key 103 mounted on a lever 104, which rocks about a pivot 105, so as to draw down on one arm 106, of a bell crank lever 107, through the intermediary of a connecting link 108. The other arm, 109, of this bell crank lever 107 is bifurcated at its upper end and provided with pins 110, which engage in an annular groove in the clutch element 22. A spring 111 is connected to the arm 109, so as to hold the clutch element 22 normally away from the clutch 17.

If it is desired to rotate the platen solely, both of the keys 97 and 103 must be depressed simultaneously, so as to move the clutch 17 out of mesh with the clutch element 15, and move the clutch element 22 and the clutch 17 into mutual mesh with each other. Of course, the key 103 can be actuated alone to bring the clutch element 22 into engagement with the clutch 17, so as to afford a concomitant rotation of the platen with a traveling movement of the carriage. Likewise, the key 97 can be operated alone, to disconnect the carriage from the driving train without connecting the platen, in driven relation with the driving train.

In view of the fact that this case covers the line-spacing mechanism, the operation

will be described more particularly as related to this mechanism.

Under normal conditions, as will be seen by reference to Figs. 5, 11 and 12, the clutch element 22 is held out of engagement with the clutch 17 by the spring 111, so that the platen 6 is rotatively disconnected from the shaft 14 and thus from the controlling mechanism which governs the connection of the shaft 14 with the motor 47. Ordinarily it is not desired to rotate the platen at the same time that the carriage is traversed, so that both the key 97 and the key 103 will be depressed simultaneously by two fingers of one hand of the operator, so as not only to bring the clutch element 22 into engagement with the clutch 17, but also to move the clutch member 17 out of mesh with the clutch element 15. While the keys 97 and 103 are held in their depressed position, the controlling mechanism, which governs the connection of the shafts 44 and 45 in driven relation with the shaft 46, can be manipulated with the other hand of the operator.

If it is desired to rotate the platen forwardly in a normal line-spacing direction an undetermined amount, the lever 56 can be manipulated to bring the clutch element 55 into engagement with the clutch element 54, whereby the platen can be rotated any desired amount dependent on the period which these clutch elements are held in engagement with each other. If it is desired to rotate the platen an undetermined amount in the opposite direction, that is, backward, instead of the lever 56 being manipulated, it is merely necessary to move the lever 58 so as to bring about a connection of the clutch elements 60 and 61, when there will be a direct drive from the continuously-rotating shaft 46 to the shaft 45. On the other hand, if it is desired to rotate the platen a distance corresponding to any given number of line spaces, then one of the keys 76 would be depressed in place of a manipulation of either the lever 56 or the lever 58.

If it is desired to space the platen a single line in a normal line-spacing direction, that is, forwardly, then it is merely necessary to depress the "1" key in the series 74 which corresponds to the mutilated gear having a single tooth. The depression of this key will bring about a connection of the single-tooth mutilated gear with the shaft 46, so that it will drive its associated gear 65 a single step or tooth-space, thus rotating the shaft 44 a corresponding fractional part of a single revolution, which rotation will be transmitted to the platen 6 to cause a single forward line-space movement thereof. Likewise, if it is desired to space the platen two, three, four or five spaces in a normal line-spacing direction, it is merely necessary to

depress the corresponding "2", "3", "4" and "5" keys in the series 74, whereby the corresponding mutilated gears will be connected to the shaft 46 to give the desired movement of the platen. Again, if in place of rotating the platen 6 in a normal line-spacing direction, it is desired to return the platen or give it a reverse or backward movement, then one of the keys in the series 75 would be depressed, the particular one depending on the number of line spaces which it is desired to return the platen. As soon as the pressure on the key 103 is released, the platen will be operatively disconnected from the driving train, so that it cannot be rotated from the motor 47, whereby this mechanism can be used separately for other purposes, such as traversing the carriage back and forth.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim—

1. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a drive shaft, a driven shaft, a connection between said shafts consisting of a loose mutilated gear and a fixed gear, and a clutch associated with said loose gear.

2. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a drive shaft, a driven shaft, a connection between said shafts consisting of a loose mutilated gear and a fixed gear, a clutch associated with said loose gear, and means for disconnecting said clutch after said mutilated gear has completed a single rotation.

3. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a drive shaft, a driven shaft, a connection between said shafts consisting of intermeshing fixed and loose gears, one of said gears being mutilated, and clutching means associated with said loose gear.

4. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a drive shaft, a driven shaft, and

a connection between said shafts consisting of intermeshing series of fixed and loose gears, the gears of one series being mutilated and each having a different number of teeth from every other one in the series, individual clutches associated with said loose gears, and selective means for determining which of said clutches shall be effective.

5. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a drive shaft, a driven shaft, and a connection between said shafts consisting of intermeshing series of fixed and loose gears, the gears of one series being mutilated and each having a different number of teeth than every other one in the series, individual clutches associated with said loose gears, selective means for determining which of said clutches shall be effective, and disconnecting means operating after a predetermined rotation of a loose gear to disconnect the same.

6. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a drive shaft, a driven shaft, and a connection between said shafts consisting of intermeshing series of fixed and loose gears, a clutch associated with each of said loose gears, and disconnecting means for manipulating the parts of said clutches to disconnect their respective gears after a predetermined rotation.

7. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a pair of driven shafts to determine the direction of drive of said train by said motor, a drive shaft, and selective mechanism for connecting said drive shaft in driving relation with either of said driven shafts.

8. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a pair of driven shafts determining the direction of rotation of said platen by said motor, a drive shaft, connections between said drive shaft and said driven shafts to drive said train from said motor to an undetermined extent, and connections between said drive shaft and said

driven shafts for driving either of said driven shafts predetermined extents by said motor.

9. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a pair of driven shafts determining the direction of movement of said platen, a drive shaft, a gear loosely mounted on each of said driven shafts, a pair of gears meshing with said first-mentioned gears and fixed to said drive shaft, a clutch for connecting each of said loosely-mounted gears with its shaft, spring means normally holding said clutches in their ineffective positions, and individual levers for enabling the manipulation of said clutches to their effective positions.

10. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a pair of driven shafts determining the direction of drive of movement of said platen, a series of gears fixed on each of said driven shafts, a drive shaft, two series of gears loosely mounted on said drive shaft, and means for connecting said loosely-mounted gears individually to said drive shaft for a predetermined period.

11. The combination with a platen, of a motor for rotating said platen, a driving train connected to said motor, and driving connections between said train and said platen, said train being normally inactive and having means to render the same active comprising a pair of driven shafts, determining individually the direction of movement of said platen, a series of gears fixed on each of said driven shafts, a drive shaft, two series of gears loosely mounted on said drive shaft and arranged to drive said fixed gears, a clutch individual to each of said loosely-mounted gears for connecting the same to rotate with said drive shaft, each of said loosely-mounted gears having a different number of teeth from its fellows corresponding to a different extent of rotation of the associated fixed gear on one of the driven shafts, and means for manipulating said clutches to render the same effective and ineffective.

12. The combination with a platen, of a source of power, and rotating means to enable said source of power to revolve said platen to different predetermined extents from any position of said platen and selectively in either one of two directions.

13. The combination with a platen, of a source of power, and a driving train be-

tween said source of power and said platen, said driving train having a series of different points of connection for effecting different degrees of rotation of said platen.

5 14. The combination with a platen, of a source of power, and a driving train for connecting said source of power in driving relation with said platen to enable the rotation of said platen by said source of
10 power, said train being normally inactive and having separate means for rendering it active at a plurality of points.

15 15. The combination with a platen, of a source of power, and a driving train for connecting said source of power in driving relation with said platen to enable the rotation of said platen by said source of power, said train being normally inactive
20 and having means for rendering it active at a plurality of points, said means giving different periods of driving connection at each of said points in a graded manner corresponding to different extents of movement of said platen.

25 16. The combination with a platen, of a motor for rotating said platen, and a driving train between said motor and said platen, said train being normally inactive and having means for rendering it active at a plurality of points, the means at each of said
30 points enabling a different number of line-space movements of said platen.

35 17. The combination with a platen, of a motor for rotating said platen, and a driving train between said motor and said platen, said platen, said train being normally inactive and having means for rendering it active at five points, the means at the several points enabling one, two, three, four, and
40 five line-space movements of said platen.

45 18. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor with said platen, said train being normally inactive and having means for rendering it active at a plurality of points, said means at one point enabling a single line-space movement of said platen, and at the other points enabling successively increased numbers of
50 definite line-space movements of said platen, increasing by a definite increment.

55 19. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor with said platen, said train being normally inactive and including a drive shaft, a series of mutilated gears loosely mounted on said drive shaft, and means for individually connecting said mutilated gears to said drive shaft to render
60 said train active, said mutilated gears having varying numbers of teeth corresponding to different line-space movements of said platen.

65 20. The combination with a platen, of a motor for rotating said platen, and a driv-

ing train connecting said train with said platen, said train being normally inactive and including a drive shaft, a series of mutilated gears loosely mounted on said drive shaft, and means for connecting said mutilated gears individually to said drive shaft to render the train active. 70

21. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train being normally inactive and including a drive shaft, a series of mutilated gears loosely mounted on said drive shaft, and means for connecting said mutilated gears individually to said drive shaft to render the train active between said motor and said platen, each of said mutilated gears having one tooth more than the gear next preceding it corresponding to different extents of movements of said platen, each of said teeth corresponding to a line-space movement of said platen. 75 80 85

22. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor to said platen, said train being normally inactive and including means for rendering it active to effect a definite predetermined rotation of said platen corresponding to a definite plural number of line-spaces, and mechanism insuring but a single action of said means at one time. 90 95

23. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor with said platen, said train being normally inactive and including means connectible to the train for rendering it active, and mechanism for insuring the disconnection of said means after a predetermined drive corresponding to a definite rotation of said platen. 100 105

24. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor with said platen, said train being normally inactive and including means to render it active, having a definite cycle corresponding to a given rotation of said platen, controlling means for starting the action of said first-mentioned means, and tripping mechanism for insuring the disconnection of said first-mentioned means after the completion of its cycle. 110 115

25. The combination with a platen, of a motor for rotating said platen, a driving train between said motor and said platen, said train being normally inactive, connecting means for rendering said train active for a period of rotation corresponding to a single line-space movement of said platen, and selecting means for determining whether the movement of said platen shall be in one direction or the other. 120 125

26. The combination with a platen, of a motor for rotating said platen, a driving 130

train between said motor and said platen, said train being normally inactive so as to prevent movement of said platen by said motor, and selective means for rendering the train active for different predetermined periods of rotation corresponding to one, two, or more line-space movements of said platen.

27. The combination with a platen, of a motor for rotating said platen, a driving train between said motor and said platen, said train being normally inactive to prevent the rotation of said platen by said motor, and a key for rendering the train active to drive said platen an extent corresponding to a definite plural number of line-spaces.

28. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train being normally inactive so as to prevent the rotation of said platen by said motor, and a series of keys for rendering said train active to drive said platen to different predetermined extents.

29. The combination with a platen, of a motor for rotating said platen, and a plurality of keys for effecting rotations of said platen to different definite extents by said motor.

30. The combination with a platen, of a motor for rotating said platen, and a plurality of keys for controlling the rotation of said platen by said motor in different directions.

31. The combination with a platen, of a motor for rotating said platen, a series of keys for controlling the rotation of said platen by said motor to different extents in one direction, and a series of keys for controlling the rotation of said platen by said motor to different extents in the opposite direction.

32. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train being normally inactive so as to prevent the rotation of said platen by said motor, and a series of keys for rendering said train active, each of said keys corresponding to a different number of line-space movements of said platen.

33. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train being normally inactive, a key for rendering said train active to enable a rotation of said platen in one direction, and a key for rendering said train active to enable a rotation of said platen in the opposite direction.

34. The combination with a platen, of a motor for rotating said platen, a driving train between said motor and said platen, a key for enabling a rotation of said platen in a normal line-spacing direction a given

number of line spaces, and a key for enabling a rotation of said platen in the reverse direction a given number of line spaces.

35. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, a series of keys for effecting rotations of said platen in a normal line-spacing direction, and a series of keys for effecting rotations of said platen in the reverse-to-normal direction.

36. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, a series of keys for effecting rotations of said platen in a normal line-spacing direction, and a series of keys for effecting rotations of said platen in the reverse direction, each key in each series effecting a rotation of different magnitude from that effected by every other key in the same series.

37. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor with said platen, said train being normally inactive and including a drive shaft, a driven shaft, a gear on said driven shaft, a mutilated gear loosely mounted on said drive shaft and arranged to mesh with said gear on said driven shaft, a clutch for connecting said mutilated gear to said drive shaft, and a key for controlling said clutch.

38. The combination with a platen, of a motor for rotating said platen, and means for enabling the rotation of said platen by said motor, said means including a driving train connecting said motor with said platen, said train being normally inactive and including a drive shaft, a driven shaft, a pinion on said driven shaft, a mutilated gear on said drive shaft arranged to mesh with said pinion on said driven shaft, said mutilated gear being loosely mounted, a clutch for connecting said mutilated gear with said drive shaft, a key for rendering said clutch effective to connect said mutilated gear with said drive shaft, and a tripper for insuring the disconnection of said mutilated gear from said drive shaft.

39. The combination with a platen, of a motor for rotating said platen, and means for enabling the rotation of said platen by said motor, said means including a driving train between said motor and said platen, said train being normally inactive and including a drive shaft, a driven shaft, a pinion fixed on said driven shaft, a mutilated gear loosely mounted on said drive shaft, a clutch for connecting said mutilated gear to said drive shaft, means for causing a connection of said mutilated gear with said drive shaft through the intermediary of said clutch, and a tripper acting at the end of a complete revolution of said multi-

lated gear with said drive shaft, to render said train inactive by disconnecting parts of said clutch.

40. The combination with a platen, of a motor for rotating said platen, and tabulating means for connecting said motor with said platen to space said platen back and forth different definite extents from any point in the movement of said platen.

41. The combination with a platen, of a motor for rotating said platen, means for enabling the rotation of said platen by said motor, said means including a driving train for connecting said motor and said platen, said train being normally inactive and including a drive shaft, a driven shaft, a series of mutilated gears loosely mounted on said drive shaft, a series of pinions for meshing with said mutilated gears respectively and secured to said driven shaft and a clutch for each of said mutilated gears for connecting it to rotate with said drive shaft, and a key controlling each of said clutches to connect the associated mutilated gear to said drive shaft, said mutilated gears having different numbers of teeth increasing successively by equal increments.

42. The combination with a platen, of a motor for rotating said platen, means for enabling the rotation of said platen by said motor, said means including a driving train for connecting said motor with said platen, said train being normally inactive and including a drive shaft, a driven shaft, a series of mutilated gears loosely mounted on said drive shaft, a series of pinions for meshing with said mutilated gears respectively and secured to said driven shaft and a clutch for each of said mutilated gears for connecting it to rotate with said drive shaft, a key controlling each of said clutches to connect the associated mutilated gear to said drive shaft, said mutilated gears having different numbers of teeth increasing successively by equal increments, and a tripper for each of said clutches acting to render said clutches ineffective after a given movement of the associated mutilated gear with said drive shaft.

43. The combination with a platen, of a motor for rotating said platen, means for enabling the rotation of said platen by said motor, said means including a driving train for connecting said motor with said platen, said train being normally inactive and including a drive shaft, a driven shaft, a series of mutilated gears loosely mounted on said drive shaft, a series of pinions for meshing with said mutilated gears respectively and secured to said driven shaft, and a clutch for each of said mutilated gears for connecting it to rotate with said drive shaft, a key controlling each of said clutches to connect the associated mutilated gear to said drive shaft, said mutilated gears hav-

ing different numbers of teeth increasing successively by equal increments, a tripper for each of said clutches acting to render said clutches ineffective after a given movement of the associated mutilated gear with said drive shaft, and a bar universal to said trippers actuating at the connection of any of said mutilated gears with said drive shaft to insure the disconnecting action of said trippers.

44. The combination with a platen, of a motor for rotating said platen, means for enabling the rotation of said platen by said motor, said means including a driving train for connecting said motor with said platen, said train being normally inactive and including a drive shaft, a driven shaft, a series of mutilated gears loosely mounted on said drive shaft, a series of pinions for meshing with said mutilated gears respectively and secured to said driven shaft and a clutch for each of said mutilated gears for connecting it to rotate with said drive shaft, a key controlling each of said clutches to connect the associated mutilated gear to said drive shaft, said mutilated gears having different numbers of teeth increasing successively by equal increments, a tripper for each of said clutches acting to render said clutches ineffective after a given movement of the associated mutilated gear with said drive shaft, a cam rotating with each of said mutilated gears, and a bar operated by said cam during the rotation of any of said mutilated gears with said drive shaft, said bar engaging said trippers to insure the disconnection of the mutilated gear in action from said drive shaft by its tripper.

45. The combination with a platen, of a motor for rotating said platen, means for enabling the rotation of said platen by said motor, said means including a driving train connecting said motor with said platen, said train being normally inactive so as to prevent the rotation of said platen by said motor, and means to render said train active, comprising a drive shaft, a driven shaft, a mutilated gear loosely mounted on said drive shaft, a pinion secured to said driven shaft and engageable by said mutilated gear, a clutch connecting said mutilated gear to rotate with said driving shaft, a tripper for interrupting the action of said clutch, a spring for holding said tripper in its effective position, and positive means actuated at each rotation of said mutilated gear insuring the disconnecting position of said tripper.

46. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train being normally inactive and including a drive shaft, a gear loosely mounted on said drive shaft and a clutch for connecting said gear to said drive shaft, a tripper for rendering said clutch effective to connect

said gear with said drive shaft, a key for shifting said tripper to effect the connection of said gear with said drive shaft, and means actuated by each rotation of said gear with said drive shaft for positioning said tripper to render said clutch ineffective, so as to enable the disconnection of said gear from said shaft.

47. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor with said platen, said train including a drive shaft, a driven shaft, and a connection between said shafts consisting of intermeshing fixed and loose gears, and a clutch associated with said loose gear.

48. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train including a drive shaft, a driven shaft, and a connection between said shafts consisting of intermeshing fixed and loose gears, a clutch associated with said loose gear, means for holding said clutch in a normal position, and means for manipulating said clutch to control the driving of said platen by said motor.

49. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train including a drive shaft, a driven shaft, a gearing for connecting said drive shaft with said driven shaft, and spring-controlled means associated with said gearing for normally rendering the same inactive, to interrupt the transmission from said drive shaft to said driven shaft.

50. The combination with a platen, of a motor for rotating said platen, a driving train for connecting said motor with said platen, said train including a drive shaft, a driven shaft, and a connection between said shafts consisting of intermeshing fixed and loose gears, a clutch associated with said loose gear, a lever for manipulating said clutch, and a spring for holding said clutch normally in its disconnected position.

51. The combination with a platen, of a motor for rotating said platen, a driving train including a drive shaft, a pair of driven shafts, a countershaft common to both of said driven shafts, gearing connecting said driven shafts with said countershaft so as to drive the latter in opposite directions, connections for joining said drive shaft with one of said driven shafts to rotate said countershaft in one direction, connections for joining said drive shaft with the other of said driven shafts to rotate said countershaft in the opposite direction, and connections between said countershaft and said platen.

52. The combination with a platen, of a

motor for rotating said platen, a driving train connecting said motor with said platen, said train including a drive shaft, a pair of driven shafts, a countershaft, gearing connecting both of said driven shafts with said countershaft to enable the former to drive the latter in opposite directions, intermeshing pairs of fast and loose gears connecting said drive shaft with both of said driven shafts, and a clutch associated with each loose gear, and means for selectively manipulating said clutches.

53. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train including a drive shaft, a pair of driven shafts, a countershaft, gearing connecting both of said driven shafts with said counter shaft to enable the former to drive the latter in opposite directions, intermeshing pairs of fast and loose gears connecting said drive shaft with both of said driven shafts, and a clutch associated with each loose gear, spring means normally holding said clutches in their ineffective position, and levers for manipulating said clutches against the tension of said spring means.

54. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train including a drive shaft, a pair of abutting driven shafts, a countershaft, a bevel gear on said countershaft, a pair of oppositely-facing bevel gears secured, respectively, one on each of said driven shafts and meshing with said first-mentioned bevel gear to drive said countershaft in opposite directions, a gear loosely mounted on each of said driven shafts, a pair of gears fixed on said drive shaft and meshing with said loosely-mounted gears, a clutch for securing each of said loosely-mounted gears to its shaft, and means for manipulating said clutches.

55. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train being normally inactive, means for rendering said train active for an undetermined period of operation to rotate said platen any undetermined amount, and means for rendering said train active for a definite predetermined period of operation corresponding to a definite plural number of line-space movements of said platen.

56. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, said train being normally inactive, clutching means for rendering said train active for an undetermined period of opera-

tion and at a plurality of points to enable any undetermined rotation of said platen selectively backwardly or forwardly, and clutching means for rendering said train 5 active for a definite predetermined period of operation at any one of a plurality of points corresponding to different definite predetermined extents of rotation of said platen.

10 57. The combination with a platen, of a motor for rotating said platen, a driving train for connecting said motor with said platen, said train being normally inactive, clutching means for rendering said train 15 active for any undetermined period of operation at a plurality of points to enable any undetermined rotation of said platen selectively backwardly or forwardly, and clutching means for rendering said train 20 active for a definite predetermined period of operation at any one of a plurality of points corresponding to different definite predetermined rotations of said platen selectively in one direction or the other.

25 58. The combination with a platen, of a motor for rotating said platen, means for effecting an undetermined rotation of said platen by said motor, and means for effecting a definite predetermined rotation of said 30 platen by said motor to an extent corresponding to a definite predetermined plural number of line-space movements.

59. The combination with a platen, of a motor for rotating said platen, means for effecting an undetermined extent of rotation 35 of said platen by said motor in either one direction or the other, and means for effecting a definite predetermined rotation of said platen by said motor to an extent corresponding to a definite predetermined 40 plural number of line-spaces in one direction or the other.

60. The combination with a platen, of a motor for rotating said platen, a driving 45 train connecting said motor with said platen, said train including a drive shaft, a pair of driven shafts, a countershaft arranged to be alternately driven by said driven shafts in opposite directions, a gear 50 loosely mounted on each of said driven shafts, a clutch for connecting each of said gears to said driven shafts, a pair of gears on said drive shaft and meshing with said loosely-mounted gears, a lever for manipulating each of said clutches, a spring for holding each of said clutches normally in its disconnected position, a series of gears 55 fixed on each of said driven shafts, a series of mutilated gears loosely mounted on said drive shaft and arranged to mesh with said fixed gears on said driven shafts, and clutches for connecting said mutilated gears 60 individually to said drive shaft, trippers

normally rendering said second-mentioned clutches ineffective, and keys individual to 65 each of said mutilated gears for actuating said trippers to enable the engagement of said second-mentioned clutches so as to cause predetermined line-space movements of said platen selectively in one direction 70 or the other.

61. The combination with a platen, of a motor for rotating said platen, a driving train connecting said motor with said platen, the train being normally ineffective, a plu- 75 rality of clutches for rendering said train effective at different points to govern the kind of rotary movement imparted to said platen by said motor, and a clutch for determining the subservience of said platen to 80 said motor irrespective of said first-mentioned clutches.

62. The combination with a platen, of a motor for rotating said platen, a driving train for connecting said motor with said 85 platen, said train being normally ineffective, a plurality of clutches for rendering said train effective at a plurality of different points to govern the kind of rotary movement imparted to said platen by said motor, 90 and a clutch located intermediate said first-mentioned clutches and said platen to determine the effectiveness of said train independent of said first-mentioned clutches.

63. The combination with a platen, of a 95 motor for rotating said platen, a normally inactive driving train extending between said motor and said platen, key-controlled means for rendering said train effective to rotate said platen in one direction, and key- 100 controlled means independent of the first-named means for rendering said train effective to rotate said platen in the opposite direction.

64. The combination with a platen, of a 105 motor for rotating said platen, a driving train for connecting said motor to said platen, said train being normally inactive, a series of keys for rendering said train active to enable the rotation of said platen 110 by said motor, and key-controlled means for determining the subservience of said platen to said train when rendered active by said first-mentioned keys.

65. The combination with a platen, of a 115 motor for rotating said platen, and a plurality of selective driving trains connecting said platen with said motor to rotate said platen a given amount corresponding to a plural number of line-spaces, or an 120 indefinite amount.

66. The combination with a platen, of a motor for rotating said platen, and a driving train connecting said motor with said platen, said train being normally inactive, 125 and including a drive shaft, a driven shaft,

a plurality of mutilated gears on one of said shafts, and a plurality of complete gears on the other of said shafts corresponding to said mutilated gears, said mutilated gears
5 having different numbers of teeth starting with a minimum and increasing by increments so as to effect different numbers of line-space movements of said platen.

67. The combination with a platen, of a
10 motor for rotating said platen, and a multiplex driving train connecting said motor to said platen, said train being normally inactive, and including means to render it active in a plurality of ways, each way corresponding to a different driving ratio between said motor and said platen.

68. The combination with a platen, of a motor for rotating said platen, and a series of keys for controlling the rotation of said
20 platen by said motor, each of said keys effecting a movement of said platen different in extent from that determined by the others of said keys.

69. The combination with a platen, of
25 means for rotating said platen, and selective mechanism for enabling the rotation of said platen by said means either in a forward direction or in a backward direction, said selective mechanism being also selective as
30 to the degree of rotation of said platen by said first-mentioned means in one direction or the other.

70. In a typewriting machine, the combination with a carriage, and a rotatable
35 platen thereon, of a plurality of means, distinct from one another, for effecting variable rotations of said platen according to the particular means operated, and a key individual to each of said means for operating
40 the same; said keys being mounted upon the framework of the machine.

71. The combination of a rotatable platen, a plurality of means, distinct from one another, for effecting back and forth rotations of said platen of different definite predetermined extents, and a key individual to each of said means for operating the same.

72. The combination with a platen, of a motor for line-spacing the platen, a normally-
50 inactive driving train for connection said motor to said platen, key-controlled means for rendering said train active to line-space said platen in normal direction, and key-controlled means independent of the first-named
55 means for rendering said train active to line-space said platen in reverse direction.

73. The combination with a platen, of a motor for line-spacing said platen, a normally-inactive driving train for connecting
60 said motor to said platen, means for rendering said train active to line-space said platen to a definite predetermined extent in normal direction, and means independent of the first-named means for rendering said train

active to line-space said platen to a definite
65 extent in reverse direction.

74. The combination with a platen, of a motor for line-spacing said platen, a normally-inactive driving train for connecting
70 said motor to said platen, means for rendering said train active to line-space said platen in one direction to an extent corresponding to a predetermined plural number of line-spaces, and means independent of the first-named means for rendering said train active
75 to line-space said platen in the opposite direction to an extent corresponding to a predetermined plural number of line-spaces.

75. The combination with a platen, of a motor for line-spacing said platen, a normally-inactive driving train for connection
80 said motor to said platen, key-controlled means for rendering said train active to line-space said platen to a definite predetermined extent in normal direction, and key-controlled means independent of the first-named
85 means for rendering said train active to line-space said platen to a definite predetermined extent in reverse direction.

76. The combination with a platen, of a
90 motor for line-spacing said platen, a normally-inactive driving train for connecting said motor to said platen, key-controlled means for rendering said train active to line-space said platen in one direction to an extent
95 corresponding to a predetermined plural number of line-spaces, and key-controlled means independent of the first-named means for rendering said train active to line-space
100 said platen in the opposite direction to an extent corresponding to a predetermined plural number of line-spaces.

77. The combination with a platen, of a source of power, and selective means for connecting said source of power with said platen
105 so as to impart line-space movements to the latter to different predetermined extents and in either of two directions.

78. The combination with a platen, of a motor for line-spacing said platen, a key for
110 enabling line-space movement of said platen by said motor in normal direction only and to the definite extent of a single line-space only, and a separate key for enabling a line-space movement of said platen by said motor
115 in reverse direction only and to the definite extent of a single line-space only.

79. The combination with a platen, of a motor for line-spacing the platen, a key for enabling a line-space movement of said
120 platen by said motor in one direction only and to the definite extent of a predetermined number of line-spaces only, and a separate key for enabling a line-space movement of said platen by said motor in the opposite
125 direction only and to the definite extent of a predetermined number of line-spaces only.

80. The combination with a platen, of a

motor for line-spacing the platen, a key for enabling a line-space movement of said platen by said motor in one direction only and to the definite extent of a predetermined
5 number of line-spaces only, and a separate key for enabling a line-space movement of said platen by said motor to the same defi-

nite extent only as the first-named key but in the opposite direction only.

SAMUEL E. CARLIN.

Witnesses:

CHARLES S. WILSON,
ALLENA OFFUTT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."