

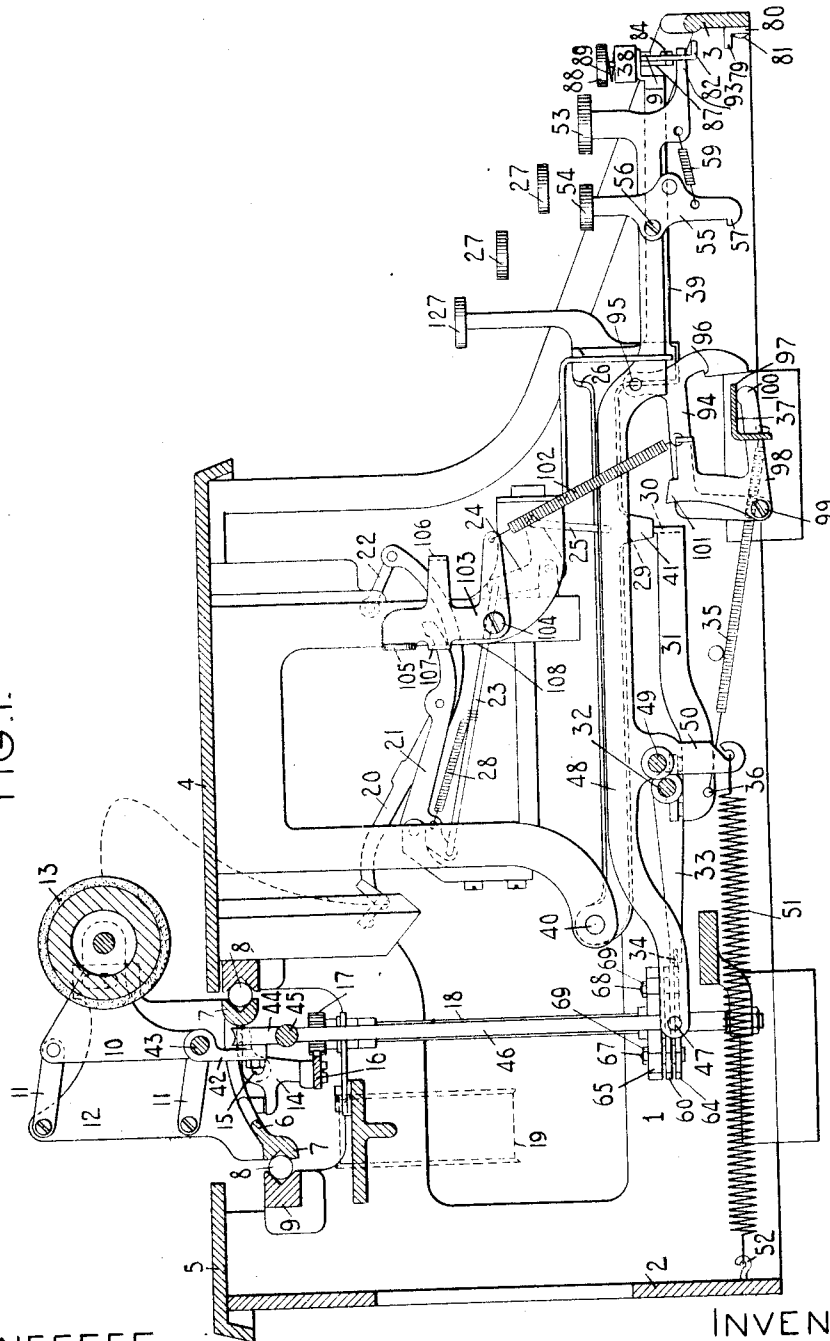
1,057,013.

C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED JULY 2, 1912.

Patented Mar. 25, 1913.

5 SHEETS-SHEET 1

FIG. 1.



WITNESSES

E. M. Wells
L. Nelson

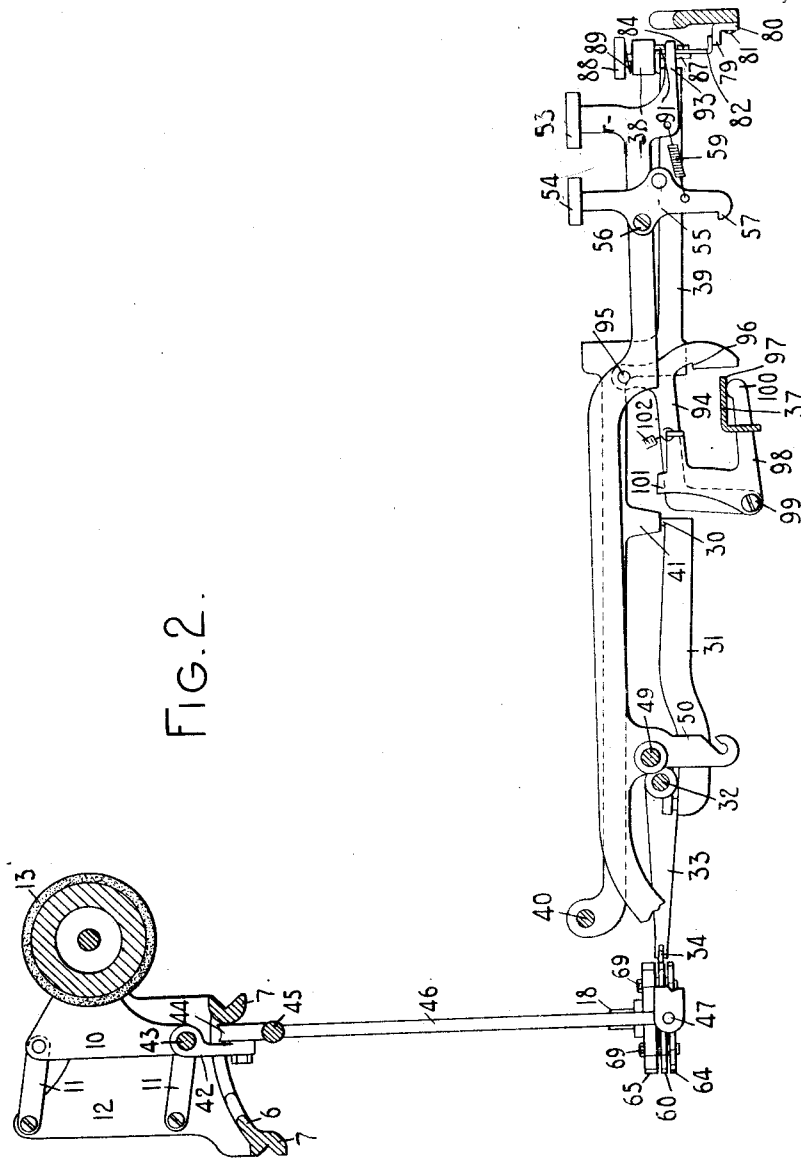
INVENTOR

Charles E. Smith
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5 SHEETS--SHEET 2.



WITNESSES.

E. M. Wells
L. Nelson

INVENTOR.

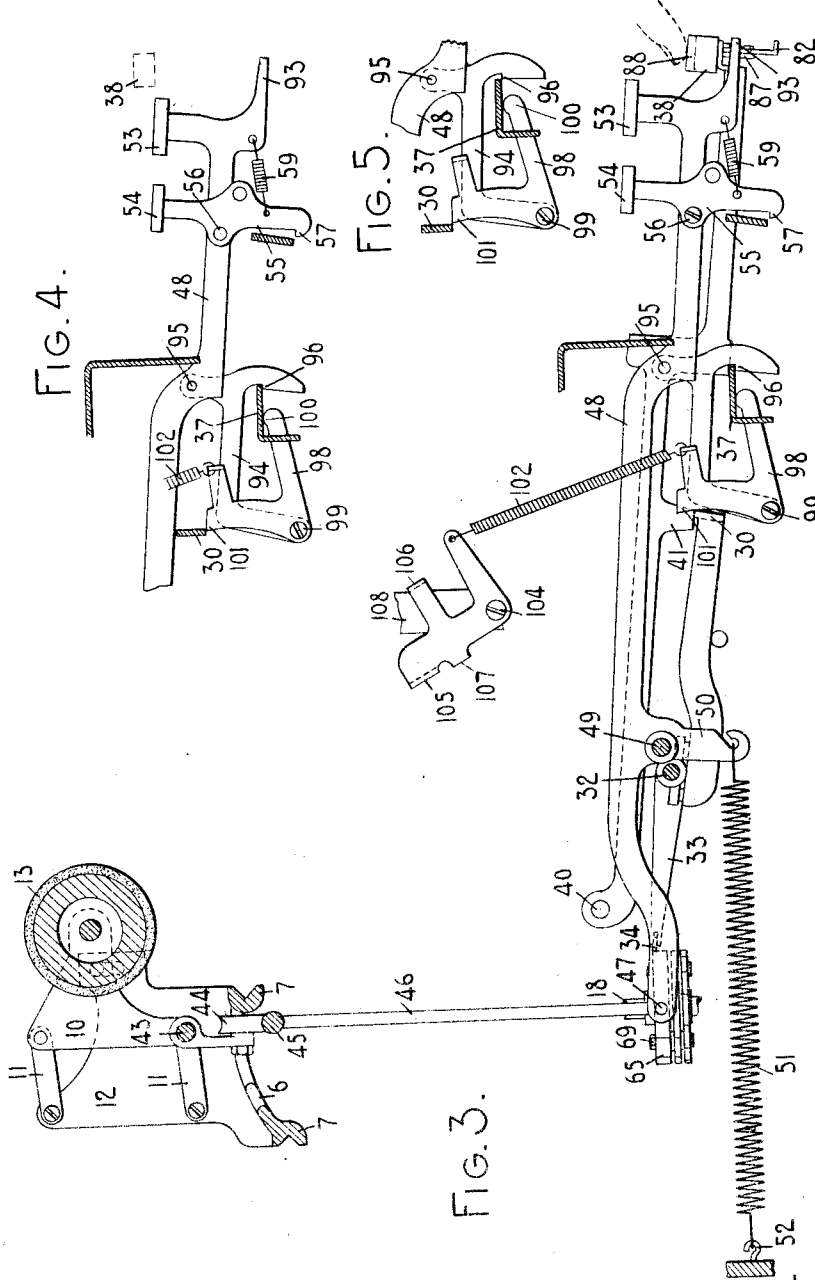
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TYPE WRITING MACHINE.
APPLICATION FILED JULY 2, 1912.

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5 SHEETS—SHEET 3.



WITNESSES:

W. M. Wells

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INVENTOR.

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5 SHEETS-SHEET 4.

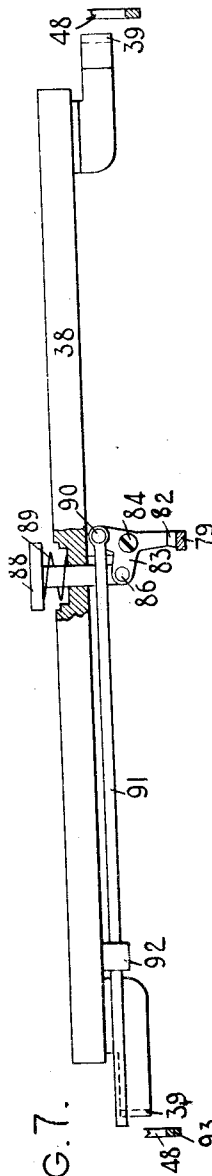


FIG. 7.

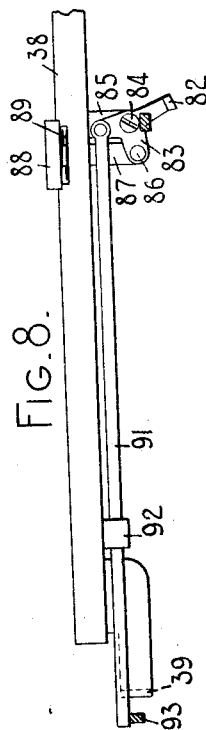


FIG. 8.

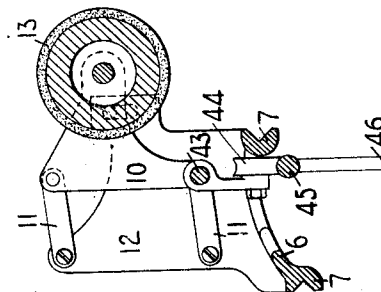
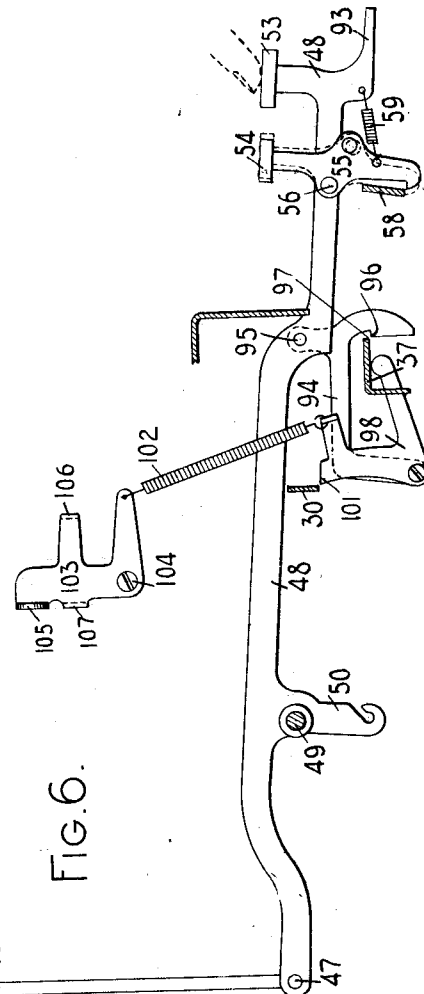


FIG. 6.



WITNESSES:

E. M. Wells
L. Nelson

INVENTOR:

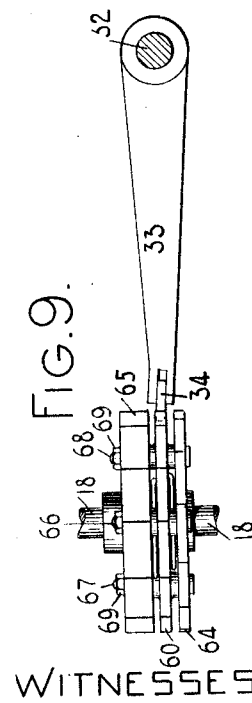
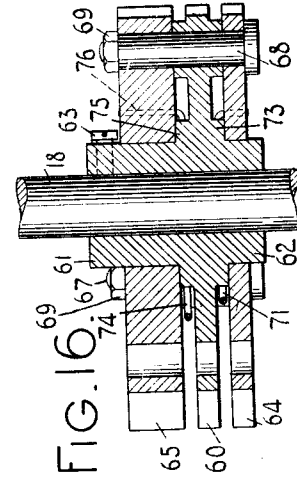
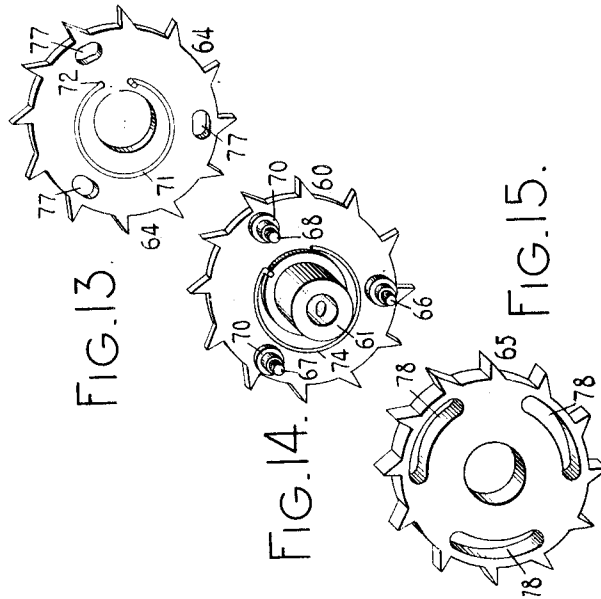
Charles E. Smith
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1,057,013.

C. E. SMITH.
TYPE WRITING MACHINE.
APPLICATION FILED JULY 2, 1912.

Patented Mar. 25, 1913.
5 SHEETS—SHEET 5.



WITNESSES:

E. M. Wells.
L. Nelson.

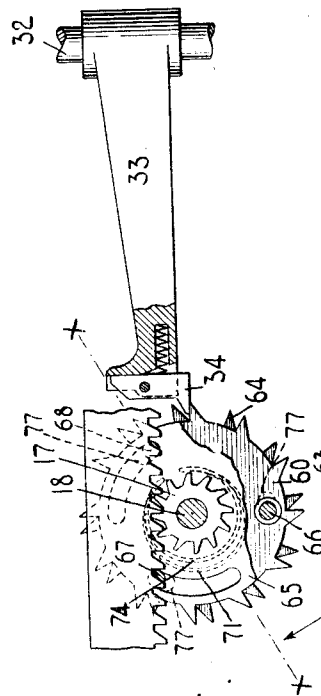


FIG. 10.

FIG. 11

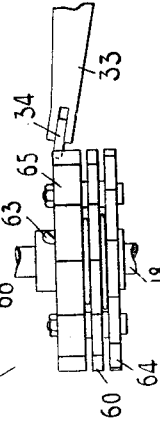
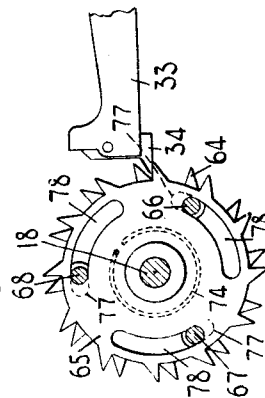


FIG. 12.



INVENTOR:

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By Jacob Felbel

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UNITED STATES PATENT OFFICE.

CHARLES E. SMITH, OF NEW YORK, N. Y., ASSIGNOR TO UNION TYPEWRITER COMPANY,
OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

1,057,013.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed July 2, 1912. Serial No. 707,154.

To all whom it may concern:

Be it known that I, CHARLES E. SMITH, citizen of the United States, and resident of the borough of Brooklyn, city of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines.

Ordinarily after completing a sentence it is necessary to effect a requisite space to begin the next sentence by actuating the space key, then depressing the shift key and holding it down, then writing the capital letter, and then releasing the shift key. Most operators provide three spaces between the termination of one sentence and the beginning of the next, and this ordinarily requires three separate actuations of the space key, which, in addition to depressing the shift key, writing the character, and then releasing the shift key, may be regarded as six operations. By the present invention I provide means by which I am enabled to effect the same result by two operations, thus saving four operations when starting to write each sentence.

One of the main objects of my invention is to provide means of the character specified above, although other objects will appear from the following description.

To the above and other ends which will hereinafter appear, my invention consists in the features of construction, arrangements of parts and combinations of devices set forth in the following description and particularly pointed out in the appended claims.

In the accompanying drawings in which like reference characters indicate like parts in the various views, Figure 1 is a vertical, central, fore and aft, sectional view of one form of typewriting machine embodying my invention, the parts being shown in this figure in the normal position. Fig. 2 is a fragmentary skeletonized side elevation showing some of the parts represented in Fig. 1 and representing the parts as they appear at the termination of a depression of the space key for ordinary letter spacing operation. Fig. 3 is a like view of the same showing the parts as they appear when the space key is depressed to the limit

of its movement to effect a case shift operation and a double letter space movement of the carriage. Fig. 4 is a fragmentary side elevation of some of the parts represented in the preceding figures but showing the parts as they appear after the space key has returned to normal position and the case shift mechanism has been locked in its shifted position. Fig. 5 is a like view of the same, representing the parts at the instant that the case shift lock mechanism is released. Fig. 6 is a view which corresponds to Fig. 3 except that in Fig. 6 the automatically operating case shift locking mechanism is rendered inoperative. Fig. 7 is a fragmentary detail front elevation with parts in section of the space key or bar and some of the associated parts. Fig. 8 is a like view of a portion of the same, showing the parts disposed as they appear at the full extent of depression of the space key effected from an actuation of the auxiliary key. Fig. 9 is an enlarged detail fragmentary side elevation of the escapement mechanism showing the parts disposed as they appear at the depression of the space key to afford a single letter space movement of the carriage. Fig. 10 is a plan view of the same, with parts broken away. Fig. 11 is a view which corresponds to Fig. 9 except that the parts are represented as they appear at the full extent of depression of the space key to afford a plural letter space movement of the carriage. Fig. 12 is a plan view of the parts as they appear in Fig. 11. Figs. 13, 14 and 15 are detail perspective views of the three escapement wheels forming part of the escapement mechanism. Fig. 16 is an enlarged detail sectional view of the escapement wheels mounted in place on the escapement wheel shaft, the section being taken on the line *x-x* of Fig. 10 and looking in the direction of the arrow at said line.

My invention, regarded from certain aspects, is in the nature of an improvement on the construction disclosed in the patent to Arthur W. Smith No. 1,015,849 dated January 30, 1912.

I have shown my invention embodied in the present instance in a No. 15 Yost machine although the arrangement of some of the parts ordinarily embodied in that machine have been slightly modified. It should be understood, however, that the invention

may be embodied in various forms of type-writing machines and may be variously modified to effect such an embodiment.

The frame of the machine comprises side plates 1, end plates 2 and 3 and top plates 4 and 5. The carriage comprises a truck section 6 provided with oppositely grooved guide rails 7 for coöperation with anti-friction balls or rollers 8 which are likewise received in oppositely grooved fixed guide rails 9 secured at their ends to the side plates 1 of the frame. A platen frame 10 is pivotally connected to parallel links 11, which in turn are pivoted to upright end plates 12 on the carriage truck. The platen frame supports the usual cylindrical platen 13 which travels with the carriage over the top plate from side to side of the machine. Depending arms 14 are pivoted at 15 to depending ears on the carriage truck. These arms support a carriage feed rack 16 which meshes with a feed pinion 17 connected to an escapement wheel shaft 18. The escapement wheel shaft is controlled by suitable escapement mechanism to be hereinafter described by which a letter feed movement of the carriage under control of the usual spring drum 19 is effected.

The printing instrumentalities, in the present instance, comprise upwardly and rearwardly striking, segmentally arranged, type bars 20 which are actuated by drivers 21 and are guided by guide links 22. Actuating links 23 are each connected at one end to the driver 21 and at its opposite end to an angular lever 24. Each angular lever is in turn connected to a depending link 25 which is pivoted at its lower end to a key lever 26 provided with a finger key 27. A returning spring 28 is provided for each type action, one end of the spring being connected to the associated link 23, the opposite end thereof being connected to the associated driver. The various key levers are pivoted at 40 and are provided with depending projections 29 which co-act with a universal bar 30 to effect an actuation of the escapement mechanism. This universal bar is formed as a cross bar which extends beneath the various key levers and is connected at its ends to side arms 31 which extend rearwardly to and are adjustably connected with a rock shaft 32 mounted in suitable bearings in the base of the machine. Extending rearwardly from the rock shaft 32 is an arm 33 which constitutes a dog rocker by which a feed dog 34 is carried. A returning spring 35 is connected at one end to a pin 36 and is connected at its opposite end to a fixed angular plate 37 to return the universal bar and the parts connected therewith to normal position. A space key 38 is connected at its ends to rearwardly extending lever arms 39 which are pivoted on the same pivot rod 40 on which the printing key levers 26 are pivoted.

Each space key lever 39 is provided with a depending projection 41 which coöperates with the universal bar to control the escapement mechanism.

In order to effect a relative case shifting movement between the printing instrumentalities and the platen I have provided the usual means by which the platen is shifted from the lower case to the upper case position. Thus a depending bracket arm 42 is fixed to a cross bar 43 on the platen frame and carries a grooved roller 44 which coöperates with a shift rod 45. The shift rod is supported on upright links 46, which are pivoted at their lower ends, as at 47, to case shift key levers 48. These levers are fixed to a rock shaft 49 which turns in bearings in the base of the machine. Each case shift key lever 48 is provided with a depending arm 50 to which one end of a contractile counterbalance spring 51 is connected, the opposite end of the spring being connected to a hook 52 secured to the rear cross plate of the machine. The two case shift key levers 48 being fixed to the rock shaft 49 are adapted to turn together, and each lever carries a shift key 53 at its forward end portion. The left-hand shift key lever 48 is also provided with a shift lock key 54 carried by a locking device 55 pivoted to the shift key lever at 56, the key 54 being offset to the side of said pivot. The member 55 carries a hook 57 which is adapted to engage beneath the fixed locking device 58 secured to the base of the machine. A contractile spring 59 is connected at one end to the member 55 and at its opposite end to the associated shift key lever 48. This spring is effective to normally maintain the member 55 relatively to the left-hand shift key lever 48 in the position indicated in full lines in Fig. 6. When, however, pressure is exerted on the key 54, such pressure is effective to turn the member 55 on its pivot into coöperation with the member 58 and then to depress the shift key lever until the hook 57 reaches the lower edge of the member 58, when the member 55 will be shifted from the full line to the dotted line position, engaging the member 58 to prevent a return movement of the shift key lever and the parts controlled thereby, so that upper case writing may be effected indefinitely.

The construction as thus far described constitutes what corresponds substantially to the ordinary equipment of the No. 15 Yost machine.

In accordance with my invention I have provided escapement mechanism by which variable extents of feed of the carriage may be effected. Thus the escapement wheel shaft 18 has an escapement wheel 60 provided with oppositely projecting hub members 61 and 62, as shown in Fig. 16. This escapement wheel is adapted to be fixed to the escape-

ment wheel shaft 18 by a set screw 63. A loose escapement wheel 64 is mounted to turn on a bearing formed on the hub 62, whereas a second loose escapement wheel 65 is arranged at the opposite side of the fixed escapement wheel 60 and is adapted to turn on the hub 61. Three headed tie bolts 66, 67 and 68 extend through openings in the three escapement wheels and are provided with nuts 69 by which the wheels 64 and 65 are prevented from displacement longitudinally of the shaft. These bolts are seated friction tight in openings in the fixed escapement wheel 60 and pass freely through openings in the loose wheels. The escapement wheels are maintained spaced apart by hub-like members 70 formed on both sides of the fixed escapement wheel 60, such hubs registering with the openings in the escapement wheel 60 through which the tie bolts pass. The loose escapement wheel 64 is under pressure of a C-spring 71 fixed at one end in an opening 72 in said wheel and connected at its opposite end in an opening in an enlarged portion 73 of the hub 62. A corresponding spring 74 is connected at one end to the enlarged portion 75 of the hub 61 and is connected at its opposite end to the escapement wheel 65, as indicated at 76. The loose escapement wheel 64 is provided with three short slots 77 through which the bolts 66, 67 and 68 pass. The length of each of the slots 77 is such that a limited turning movement between the loose wheel 64 and fixed wheel 60 may be effected. The extent of this movement is represented by the distance between the teeth of the wheels, as shown in Fig. 10. The escapement wheel 65 on the other hand is provided with three long slots 78 through which the bolts 66, 67 and 68 pass. The extent of each of the slots 78 is such as to afford a double letter space movement of the wheel 65 relatively to the fixed wheel 60, such movement corresponding to the two tooth space distances of the escapement wheel 65. The springs 71 and 74 tend to advance their respective escapement wheels in the direction of the feed of the wheels. Thus the spring 71 is effective to advance its escapement wheel 64 a distance corresponding to the distance between the teeth of the wheels as the same is indicated in Fig. 10, whereas the spring 74 is effective to advance its wheel 65 a distance corresponding to the distance of two tooth spaces of the escapement wheel. The independent movement of both loose wheels relatively to the fixed wheel is limited in both directions by the bolts 66, 67 and 68.

In the normal positions of the parts the feed dog 34 engages a tooth of the escapement wheel 64 and at this time the teeth of all three escapement wheels will be maintained in alinement. The feed dog normally engaging a tooth of the escapement wheel 64

causes the spring 71 to be placed under strain by the excessive pressure of the carriage spring. When, however, the space key is depressed for ordinary spacing or a printing key is depressed, the dog rocker 33 will be moved upwardly to disengage the feed dog from the escapement wheel 64 and to engage an alined tooth of the fixed escapement wheel 60, as represented in Figs. 9 and 10. When the escapement wheel 64 is released its spring 71 is effective to advance it to the position shown in Fig. 11 and on the return movement of the dog rocker the feed dog 34 will be moved into the path of the next advancing tooth of the escapement wheel 64, thereby affording a letter space movement of the carriage. When the parts are again in normal position the teeth of the three escapement wheels will be again in alinement.

If the fullest extent of depression be given to the space key this is effective to move the dog rocker 33 upwardly to the position represented in Fig. 11 to move the feed dog into engagement with a tooth of the escapement wheel 65. The excessive pressure of the carriage spring will overcome the pressure of the spring 74 and the carriage will be allowed to travel a distance of two letter spaces until the bolts 66, 67 and 68 reach the advance ends of the respective slots in which they are seated, as indicated in Fig. 12, and further movement of the carriage is arrested. However, during the return movement of the dog rocker an additional letter space movement of the carriage is effected. This is due to the fact that when the feed dog releases the escapement wheel 64 in its movement from said wheel to the escapement wheel 65, a slight advance of the escapement wheel 64 was effected, so that at the termination of the down stroke of the key and the double letter space advance of the carriage, the parts will appear as represented in Fig. 12. It will be seen that a return movement of the dog rocker from this position affords a further letter space advance movement of the carriage in the same manner as when the feed dog is merely moved from the escapement wheel 64 to the escapement wheel 60 and back again.

It will be seen from the foregoing description that it follows that a depression of the space key to one extent is effective to move the dog rocker to the position shown in Fig. 9 and on release of the space key a single letter space movement of the carriage will be effected, whereas if the dog rocker be moved to the position indicated in Fig. 11, a double letter space movement of the carriage will be effected on the down stroke of the key and an additional single letter space movement of the carriage will be effected on the upstroke of the key, thereby affording a feed movement of the car-

riage corresponding to three letter space distances at each complete actuation of the space key for the full extent of its depression.

6 In order to assure an actuation of the space key and to limit the extent of its depression when it is intended for use merely for ordinary letter spacing, I have provided a fixed stop 79 which is formed as a part
10 of a bracket 80 secured by a screw 81 to the base of the machine. A cooperating stop 82 is formed as a part of, or as a depending arm on, an angular lever 83 which is pivoted at 84 to a depending bracket arm 85
15 secured to the bottom of the space key 38. A substantially horizontally disposed arm of the angular lever has pivoted thereto at 86 a key stem 87 which extends through an opening formed in the space key. The
20 upper end of this key stem is provided with an auxiliary key 88 and an expansion spring 89 bears at its upper end against the bottom of the key 88 and at its lower end against the bottom wall of a cut-out or depression
25 formed in the space key. An upwardly extending arm on the angular lever 83 is pivoted at 90 to a horizontally extending rod, connecting device or latching member 91. This rod extends to the left beneath the
30 space key and is guided at its free end portion by an apertured bracket 92 secured to the bottom of the space key. The construction is such therefore that the connecting member is fixed to travel up and down with
35 the space key but may be moved independently thereof in a horizontal direction.

In the normal positions of the parts the rod 91 is maintained clear and out of the path of a forwardly projecting arm 93 on
40 the left-hand shift key lever 48. When the space key is employed for ordinary spacing operations a depression thereof, effected by a direct operation on the space key, is effective to move it downwardly from the
45 normal position represented in Fig. 1 to the position represented in Figs. 7 and 8, from which it will be seen that the space key is limited in its downward movement by the engagement of the stop 82 with the
50 fixed stop 79. The means for thus limiting the depression of the space key are effective to insure a movement of the feed dog from the escapement wheel 64 to the escapement wheel 60 and back again and no farther.
55 If, on the other hand, the operator completes a sentence, the depression of the auxiliary key 88 is effective to move the stop 82 out of cooperative relation with the stop 79 and also to depress the space key beyond
60 the position where it is normally arrested by the cooperation of the stops 79 and 82. At the same time the depression of the auxiliary key 88 is effective to move the latching device 91 to the left over the projection
65 93 on the left-hand shift key lever and a

continued downward movement of the space key, through pressure exerted on the auxiliary key 88, is effective to depress the shift key and thus bring about a case shifting movement of the platen.

In certain circumstances the mechanism thus far described might be found sufficient
70 for all purposes, for a depression of the auxiliary key 88 effects a case shift operation and a plural letter space movement of the carriage in order to bring the carriage
75 to a position where a capital letter may be written to begin a new sentence while pressure is maintained on the auxiliary key. However, I prefer to employ automatically
80 operating means of the same general character as that disclosed in the patent to Arthur W. Smith hereinbefore referred to, for automatically locking the shifted part or platen in its case shift position and for
85 subsequently automatically releasing the case shift lock mechanism by an actuation of a printing instrumentality. In the present instance I have combined such means with the other features of my invention disclosed herein. Such automatically actuated
90 locking and releasing means comprise an engaging member 94 pivoted at 95 on the left-hand shift key lever 48. This member is substantially U-shaped in form and is provided with an engaging nose 96 which is
95 adapted to engage under the rear edge 97 of the fixed angular locking plate 37 hereinbefore referred to. A second member 98 is pivoted at 99 to the member 94. The
100 member 98 is in the nature of an angular lever which has one arm 100 which extends through a guide slot in the angular locking plate 37 and bears at its free end portion against the bottom wall of the horizontally
105 disposed portion of the fixed angular locking plate and is adapted to fulcrum thereon. The upright arm of the member 98 is in the nature of a pawl 101 which, when the parts are in the positions represented in Fig. 4, engages beneath the universal bar 30. A
110 contractile spring 102 is connected at one end to the member 98 and is connected at its opposite end to an angular lever or controlling member 103. This member is pivoted
115 to a fixed part of the machine, as at 104, and is provided with a finger piece 105 by which it may be turned on its pivot from the position indicated in Figs. 1 and 6 to that
120 represented in Fig. 3. Stops 106, 107 project from the member 103 at substantially right angles to the plane thereof and are adapted to engage a member 108 on which
125 the part 103 is pivoted. In this manner the pivotal movement of the member 103 is limited and there is sufficient friction between the member and the part on which it is mounted to retain it in either of the positions to which it may be shifted. It will
130 be understood that when the member 103 is

in the position represented in Fig. 6, the spring 102 is stretched and the power thereof is exerted on the member 98 and on the member 94 on which the latter is pivoted. The power of this spring, however, is relaxed when the controlling device 103 is moved to the position indicated in Fig. 6 in order to render the locking mechanism inoperative as will hereinafter appear. In the operation of this automatically actuated case shift mechanism a depression of the space key 38 to its fullest extent, as represented in Fig. 3, is effective to bring the engaging nose 96 into locking engagement with the fixed angular locking plate 37. This same depression of the space key is effective to move the feed dog from the escapement wheel 64 to the escapement wheel 65, thus affording a double letter space movement on the down stroke of the space key. A release of the space key is effective to produce an additional letter space movement of the carriage in the manner hereinbefore described and to elevate the universal bar 30 from the position shown in Fig. 3 to that represented in Fig. 4. As soon as the universal bar passes up above the engaging end of the pawl 101, the spring 102 is effective to turn the member 98 on its pivot 99 and to bring the pawl 101 beneath the universal bar, as represented in Fig. 4. The case shift mechanism, however, is still retained in the shifted position by the engagement between the members 94 and 37. The operator then strikes the requisite key to write the capital letter to begin a new sentence. This movement is effective to depress the universal bar to effect a single letter space movement of the carriage by moving the dog 34 from the escapement wheel 64 to the escapement wheel 60 and back again. During the first portion of the downward movement of the universal bar, effected by the actuation of the requisite printing key, the member 98 is carried down with the universal bar through the engagement of the pawl 101 beneath the bar. The effect of this downward movement of the member 98 is to turn the member 94 on its pivot 95, as indicated in Fig. 5, thereby releasing the locking means to permit the case shift mechanism to return to normal position. Should the operator desire to throw the automatically operating case shift locking means out of operation, it is merely necessary to move the controlling member 103 to the position indicated in Figs. 1 and 6, thereby relieving the member 98 from the power exerted by the spring 102. It follows, therefore, that when the case shift mechanism is actuated by either of the case shift keys 53, or through a complete depression of the space key 38, the locking member 94 will not be thrown into engagement with the co-operating fixed locking member 37 nor will

the pawl 101 be forced into coöperative relation with the universal bar, as will be clearly understood from an inspection of Fig. 6. When, therefore, pressure is released from the depressed shift key or the space key, the parts will immediately return to normal position and the platen will not be locked in its shifted position.

Should the operator desire to maintain the platen in its shifted position for an indefinite period in order that upper case characters alone may be written, it is merely necessary to depress the permanent case shift key 54 to effect an engagement with the member 58, thereby locking the platen in the shifted position. In order to release the locking member 55 it is merely necessary to exert a downward pressure on the left-hand shift key 53 sufficient to relieve the locking member 55 from the pressure of the platen and the parts which hold it shifted, and the spring 59 is then effective to withdraw the member 55 from engagement with the locking device 58 and the platen may return to normal position.

From the foregoing description it will be understood that a single downward movement of the key 88 is effective to withdraw the stops 82 from coöperative relation with the stop 79 to permit a full extent of downward movement of the space key, and this depression of the key 88 is also effective to bring about a depression of the space key to the fullest extent to automatically effect an operative connection between the space key and the case shift mechanism to actuate the case shift mechanism; to operate the automatically actuated case shift locking mechanism and thereby retain the platen in its shifted position; and to effect a letter feed movement of the carriage corresponding to a distance of three letter spaces in order to bring the carriage to a position where the capital letter which is to begin the next sentence may be immediately written. It will be seen, moreover, that a single operation of the printing key is effective to cause an imprint of the corresponding character and to release the case shift locking means to enable the platen to return to its normal position after a single upper case character has been written. As has been hereinbefore explained, the work effected by a single actuation of each of the keys, i. e., an actuation to its fullest extent of the spacing key and an actuation of the printing key, in the present construction is effective to accomplish what ordinarily requires six operations to produce.

While I have shown one embodiment of my invention, it should be understood that various changes may be made without departing from the spirit of my invention and that certain features may be used without others, and that if desired the automatically operating means for locking and releasing

ality, and means operable at will for throwing said automatically operating case shift locking and releasing means out of operation.

5. In a typewriting machine, the combination of a carriage, a platen, printing instrumentalities, case shift means for effecting a relative case shifting movement between the platen and the printing instrumentalities, means for effecting at a single operation a letter feed movement of the carriage for a distance corresponding to a plurality of letter spaces and an actuation of the case shift mechanism, means for locking the shifted part in the case position to which it has been moved, automatically operating means for releasing said locking means at the first actuation of a printing instrumentality, case shift locking means operable at will for locking the shifted part in the shifted position and for maintaining it in such position indefinitely, the automatically operating releasing means being ineffective to release the case shift mechanism from control of said last mentioned case shift locking means, and means operable at will for throwing said automatically operating case shift locking and releasing means out of operation.

6. In a typewriting machine, the combination of a carriage, escapement mechanism effective to afford a single letter space movement of the carriage at each actuation or a movement corresponding to a plurality of letter spaces as may be desired, case shift means, and means effective by a single operation for actuating said case shift means and for controlling the escapement mechanism to afford a movement of the carriage for a plurality of letter spaces.

7. In a typewriting machine, the combination of a carriage, escapement mechanism effective to afford a single letter space movement of the carriage at each actuation or a movement corresponding to a plurality of letter spaces as may be desired, case shift means, means effective by a single operation for actuating said case shift means and for controlling the escapement mechanism to afford a movement of the carriage for a plurality of letter spaces, automatically operating means for locking the case shift means in its shifted position, printing instrumentalities, and means controlled by an actuation of any of said printing instrumentalities for releasing said case shift locking means.

8. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, and means operable at will

4. In a typewriting machine, the combination of a carriage, a platen, printing instrumentalities, case shift means for effecting a relative case shifting movement between the platen and the printing instrumentalities, means for effecting at a single operation a letter feed movement of the carriage for a distance corresponding to a plurality of letter spaces and an actuation of the case shift means, means for locking the shifted part in the case position to which it has been moved, automatically operating means for releasing said locking means at the first actuation of a printing instrumen-

for rendering said limiting means ineffective so that a full extent of depression may be given the space key to actuate said case shift mechanism.

9. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, and an auxiliary key operable for rendering the limiting means ineffective and for giving a full extent of depression to the space key to actuate the case shift mechanism.

10. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, and an auxiliary key operable for rendering the limiting means ineffective and for giving a full extent of depression to the space key to actuate the case shift mechanism, said auxiliary key being carried by and operating on said space key.

11. In a typewriting machine, the combination of a carriage, a letter space key, case shift mechanism, an auxiliary key, and normally disconnected means controlled by said auxiliary key for operatively connecting said letter space key and case shift mechanism so that a depression of the space key is effective to actuate the case shift mechanism.

12. In a typewriting machine, the combination of a carriage, a letter space key, case shift mechanism, an auxiliary key, and means controlled by said auxiliary key for operatively connecting said letter space key and case shift mechanism and for varying the extent of depression that may be given to the letter space key.

13. In a typewriting machine, the combination of a carriage, a letter space key, case shift mechanism, an auxiliary key, and means controlled by said auxiliary key for operatively connecting said letter space key and case shift mechanism and for operating the letter space key and varying the extent of depression that may be given it.

14. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, means operable at will for rendering said limiting means ineffective so that a full extent of depression may be given the space key to actuate said

case shift mechanism, automatically operating case shift locking means, printing instrumentalities, and means controlled by an actuation of any of said printing instrumentalities for releasing said case shift locking means.

15. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, means operable at will for rendering said limiting means ineffective so that a full extent of depression may be given the space key to actuate said case shift mechanism, and means for effecting a feed movement of the carriage for a distance which corresponds to a plurality of letter spaces at each actuation of the case shift mechanism effected through an operation of the space key.

16. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, means operable at will for rendering said limiting means ineffective so that a full extent of depression may be given the space key to actuate said case shift mechanism, means for effecting a feed movement of the carriage for a distance which corresponds to a plurality of letter spaces at each actuation of the case shift mechanism effected through an operation of the space key, automatically operating case shift locking means, printing instrumentalities, and means controlled by an actuation of any of said printing instrumentalities for releasing said case shift locking means.

17. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, an auxiliary key operable for rendering the limiting means ineffective and for giving a full extent of depression to the space key to actuate the case shift mechanism, said auxiliary key being carried by and operating on said space key, and means for effecting a letter space movement of the carriage for a distance which corresponds to a plurality of letter spaces at each actuation of the space key throughout a full extent of its depression.

18. In a typewriting machine, the combination of a carriage, a letter space key,

means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, an auxiliary key operable for rendering the limiting means ineffective and for giving a full extent of depression to the space key to actuate the case shift mechanism, said auxiliary key being carried by and operating on said space key, means for effecting a letter space movement of the carriage for a distance which corresponds to a plurality of letter spaces at each actuation of the space key throughout a full extent of its depression, automatically operating case shift locking means, printing instrumentalities, and means controlled by an operation of any of said printing instrumentalities for releasing said case shift locking means.

19. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, an auxiliary key operable for rendering the limiting means ineffective and for giving a full extent of depression to the space key to actuate the case shift mechanism, said auxiliary key being carried by and operating on said space key, means for effecting a letter space movement of the carriage for a distance which corresponds to a plurality of letter spaces at each actuation of the space key throughout a full extent of its depression, automatically operating case shift locking means, printing instrumentalities, means controlled by an operation of any of said printing instrumentalities for releasing said case shift locking means, and means operable at will for rendering said automatically operating case shift locking means inoperative.

20. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, an auxiliary key operable for rendering the limiting means ineffective and for giving a full extent of depression to the space key to actuate the case shift mechanism, said auxiliary key being carried by and operating on said space key, means for effecting a letter space movement of the carriage for a distance which corresponds to a plurality of letter spaces at each actuation of the space key throughout a full extent of its depression,

automatically operating case shift locking means, printing instrumentalities, means controlled by an operation of any of said printing instrumentalities for releasing said case shift locking means, and case shift locking means operable at will for locking the shifted part in the shifted position and for maintaining it in such position indefinitely, the automatically operating releasing means being ineffective to release the case shift mechanism from control of said last mentioned case shift locking means.

21. In a typewriting machine, the combination of a carriage, a letter space key, means for limiting the extent of depression of said key and thereby rendering it operative solely for controlling the letter space movements of the carriage, case shift mechanism controlled by a further extent of depression of the space key, an auxiliary key operable for rendering the limiting means ineffective and for giving a full extent of depression to the space key to actuate the case shift mechanism, said auxiliary key being carried by and operating on said space key, means for effecting a letter space movement of the carriage for a distance which corresponds to a plurality of letter spaces at each actuation of the space key throughout a full extent of its depression, automatically operating case shift locking means, printing instrumentalities, means controlled by an operation of any of said printing instrumentalities for releasing said case shift locking means, means operable at will for rendering said automatically operating case shift locking means inoperative, and case shift locking means operable at will for locking the shifted part in the shifted position and for maintaining it in such position indefinitely, the automatically operating releasing means being ineffective to release the case shift mechanism from control of said last mentioned case shift locking means.

22. In a typewriting machine, the combination of a carriage, case shift mechanism, a letter space key, an auxiliary key carried by said space key and movable independently thereof and adapted to actuate said space key, a stop which is controlled by the independent movement of said auxiliary key and is adapted to be moved thereby to an inoperative position to afford a further extent of depression of said space key, and a latching device which also is controlled by the independent movement of the auxiliary key and which is moved thereby to effect an operative connection with the case shift mechanism.

23. In a typewriting machine, the combination of a carriage, case shift mechanism, a letter space key, an auxiliary key carried by said space key and movable independently thereof and adapted to actuate said space

key, a stop which is controlled by the independent movement of said auxiliary key and is adapted to be moved thereby to an inoperative position to afford a further extent of depression of said space key, a latching device which also is controlled by the independent movement of the auxiliary key and which is moved thereby to effect an operative connection with the case shift mechanism, and means controlled by the further extent of depression of the space key to effect a feed movement of the carriage a distance corresponding to a plurality of letter spaces.

24. In a typewriting machine, the combination of a carriage, case shift mechanism, a letter space key, an auxiliary key carried by said space key and movable independently thereof and adapted to actuate said space key, a stop which is controlled by the independent movement of said auxiliary key and is adapted to be moved thereby to an inoperative position to afford a further extent of depression of said space key, a latching device which also is controlled by the independent movement of the auxiliary key and which is moved thereby to effect an operative connection with the case shift mechanism, automatically operating case shift locking means, printing instrumentalities, and means controlled by the actuation of any of said printing instrumentalities for releasing said case shift locking means.

25. In a typewriting machine, the combination of a carriage, case shift mechanism, a letter space key, an auxiliary key carried by said space key and movable independently thereof and adapted to actuate said space key, a stop which is controlled by the independent movement of said auxiliary key and is adapted to be moved thereby to an inoperative position to afford a further extent of depression of said space key, a latching device which also is controlled by the independent movement of the auxiliary key and which is moved thereby to effect an operative connection with the case shift mechanism, automatically operating case shift locking means, printing instrumentalities, means controlled by the actuation of any of said printing instrumentalities for releasing said case shift locking means, and means controlled by the further extent of depression of the space key to effect a feed movement of the carriage a distance corresponding to a plurality of letter spaces.

26. In a typewriting machine, the combination of a power driven carriage, variable escapement mechanism therefor which affords an extent of feed movement of one or more letter spaces at each operation as may be desired, a key, and means by which said key is rendered effective to control the escapement mechanism to afford a feed of the

carriage for a distance of one or more letter spaces at each operation of said key depending on the extent of dip of the key.

27. In a typewriting machine, the combination of a power driven carriage, variable escapement mechanism therefor which affords an extent of feed movement of one or more letter spaces at each operation as may be desired, printing instrumentalities, means for controlling the escapement mechanism to afford a single letter space movement of the carriage at each actuation of a printing instrumentality, a space key, and means by which said key is rendered effective to control the escapement mechanism to afford a feed of the carriage for a distance of one or more letter spaces at each operation depending on the extent of dip of the space key.

28. In a typewriting machine, the combination of a power driven carriage, variable escapement mechanism therefor which affords an extent of feed movement of one or more letter spaces at each operation as may be desired, printing instrumentalities, means for controlling the escapement mechanism to afford a single letter space movement of the carriage at each actuation of a printing instrumentality, a space key, means by which said key is rendered effective to control the escapement mechanism to afford a feed of the carriage for a distance of one or more letter spaces at each operation depending on the extent of dip of the key, and case shift means which are actuated concurrently with the space key when the latter receives its greatest extent of dip.

29. In a typewriting machine, the combination of a power driven carriage, variable escapement mechanism therefor which affords an extent of feed movement of one or more letter spaces at each operation as may be desired, printing instrumentalities, means for controlling the escapement mechanism to afford a single letter space movement of the carriage at each actuation of a printing instrumentality, a space key, means by which said key is rendered effective to control the escapement mechanism to afford a feed of the carriage for a distance of one or more letter spaces at each operation depending on the extent of dip of the key, case shift means which are actuated concurrently with the space key when the latter receives its greatest extent of dip, automatically operating case shift locking means, and means for releasing said case shift locking means by the actuation of any of said printing instrumentalities.

30. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter space movement of the carriage and the

movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; a key; and means controlled by said key for moving said dog from the first rack to the second or from the first rack to the third as may be desired.

31. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter space movement of the carriage and the movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; case shift mechanism; and means for effecting a movement of the dog from the first rack to the third concurrently with the operation of the case shift mechanism.

32. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter space movement of the carriage and the movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; the space key of the machine; and means under control of said space key for moving said dog from the first rack to the second or third depending on the extent of dip of said space key.

33. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter space movement of the carriage and the movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; the space key of the machine; means under control of said space key for moving said dog from the first rack to the second or third depending on the extent of dip of said space key; case shift mechanism; and means for actuating said case shift mechanism concurrently with the space key when the latter receives its fullest extent of dip.

34. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter space movement of the carriage and the

movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; the space key of the machine; means under control of said space key for moving said dog from the first rack to the second or third depending on the extent of dip of said space key; means for normally limiting the extent of dip of the space key for producing a single letter space feed of the carriage; and an auxiliary key which is effective to render said limiting means ineffective to limit the depression of the space key so that a plural letter space feed of the carriage may be effected.

35. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter space movement of the carriage and the movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; the space key of the machine; means under control of said space key for moving said dog from the first rack to the second or third depending on the extent of dip of said space key; means for normally limiting the extent of dip of the space key for producing a single letter space feed of the carriage; an auxiliary key which is effective to render said limiting means ineffective to limit the depression of the space key so that a plural letter space feed of the carriage may be effected; and case shift mechanism actuated concurrently with the space key on a full depression of the latter.

36. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter space movement of the carriage and the movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; case shift mechanism; means for effecting a movement of the dog from the first rack to the third concurrently with the operation of the case shift mechanism; automatically operating case shift locking means; printing instrumentalities; and means for releasing the case shift locking means on the actuation of any of said printing instrumentalities.

37. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising three feed racks and a single dog, the movement of the dog from the first rack to the second and back again affording a single letter

space movement of the carriage and the movement of the dog from the first rack to the third and back again affording a movement of the carriage a distance corresponding to a plurality of letter spaces; the space key of the machine; means under control of said space key for moving said dog from the first rack to the second or third depending on the extent of dip of said space key; case shift mechanism; means for actuating said case shift mechanism concurrently with the space key when the latter receives its fullest extent of dip; automatically operating case shift locking means; printing instrumentalities; and means for releasing the case shift locking means on the actuation of any of said printing instrumentalities.

38. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; and a key for effecting different extents of movement of the dog.

39. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a key for effecting different extents of movement of the dog depending on the extent of dip of the key; and case shift mechanism actuated by said key.

40. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a key for effecting different extents of movement of the dog; case shift mechanism; and means for rendering said key operative to actuate said case shift mechanism.

41. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another

and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a key for effecting different extents of movement of the dog; case shift mechanism; means for rendering said key operative to actuate said case shift mechanism; automatically actuated case shift locking means; printing instrumentalities; and means controlled by an actuation of any of said printing instrumentalities for releasing said case shift locking means.

42. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; and a space key for controlling said feed dog, the extent of depression of said space key determining the movement of the dog for a single or a plural letter space movement of the carriage.

43. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a space key for controlling said feed dog, the extent of depression of said space key determining the movement of the dog for a single or a plural letter space movement of the carriage; and case shift mechanism actuated concurrently with the space key during a full depression of the latter.

44. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a space key for controlling said feed dog, the extent of depression of said space key determining the movement of the dog for a single or a plural letter space movement of the carriage; case shift mechanism actuated concurrently with the space key during a full depression of the latter; automatically actuated case shift locking means; printing instrumentalities; and means for effecting a release of the case shift locking means by an actuation of any of the printing instrumentalities.

45. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another

nation of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a space key operatively connected to said feed dog to control its movement; means for limiting the stroke of the space key to effect a single letter space movement of the carriage; an auxiliary key; and means which enable said auxiliary key to control said limiting means to enable the space key to receive a further extent of depression to effect a plural letter space movement at each actuation.

46. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a space key operatively connected to said feed dog to control its movement; means for limiting the stroke of the space key to effect a single letter space movement of the carriage; an auxiliary key; means which enable said auxiliary key to control said limiting means to enable the space key to receive a further extent of depression to effect a plural letter space movement at each actuation; and case shift mechanism actuated by such further extent of depression of the space key.

47. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a space key operatively connected to said feed dog to control its movement; means for limiting the stroke of the space key to effect a single letter space movement of the carriage; an auxiliary key; means which enable said auxiliary key to control said limiting means to enable the space key to receive a further extent of depression to effect a plural letter space movement at each actuation; case shift mechanism actuated by such further extent of depression of the space key; automatically actuated case shift locking means; printing instrumentalities; and means controlled by an actuation of any of said printing instrumentalities for releasing said case shift locking means.

48. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a space key operatively connected to said feed dog to control its movement; means for limiting the stroke of the space key to effect a single letter space movement of the carriage; an auxiliary key; means which enable said auxiliary key to control said limiting means to enable the space key to receive a further extent of depression to effect a plural letter space movement at each actuation; case shift mechanism; and means controlled by said auxiliary key for effecting an operative connection between the space key and said case shift mechanism.

49. In a typewriting machine, the combination of a power driven carriage; escapement mechanism therefor comprising two loose escapement wheels, an interposed fixed escapement wheel, and a feed dog movable from a loose wheel to the fixed wheel and back again or from one loose wheel to another and back again to afford one or more letter space movements of the carriage at each operation as may be desired; a space key operatively connected to said feed dog to control its movement; means for limiting the stroke of the space key to effect a single letter space movement of the carriage; an auxiliary key; means which enable said auxiliary key to control said limiting means to enable the space key to receive a further extent of depression to effect a plural letter space movement at each actuation; case shift mechanism; means controlled by said auxiliary key for effecting an operative connection between the space key and said case shift mechanism; automatically actuated case shift locking means; printing instrumentalities; and means controlled by an actuation of any of said printing instrumentalities for releasing said case shift locking means.

50. In a typewriting machine, the combination of a carriage, a letter space key, case shift mechanism, an auxiliary key, a connecting device for effecting an operative connection between the space key and case shift mechanism, said connecting device being normally out of coöperative relation with the case shift mechanism, and means controlled by said auxiliary key for throwing the connecting device into coöperative relation with the case shift mechanism to operatively connect the space key and case shift mechanism.

51. In a typewriting machine, the combi-

5 nation of a carriage, a letter space key, case shift mechanism, an auxiliary key, a connecting device movable horizontally into and out of the path of movement of a part
 10 of the case shift mechanism and fixed to move with the space key, and means controlled by said auxiliary key for controlling the horizontal movement of the connecting device.

15 52. In a typewriting machine, the combination of a carriage, a letter space key, case shift mechanism including a case shift lever, an auxiliary key carried by the space key, a connecting device carried by and fixed to
 20 move with the space key and adapted to be moved independently of the space key into and out of coöperative relation with the case shift lever, a spring for normally maintaining the connecting device out of coöperative relation with the shift lever, and means
 25 by which said auxiliary lever is effective to control the movement of the connecting device into and out of coöperative relation with said lever.

53. In a typewriting machine, the combination of a carriage, case shift mechanism, a

letter space key, an auxiliary key carried by said space key and movable independently thereof and adapted to actuate said space key, and a stop which is controlled by the independent movement of said auxiliary key and is adapted to be moved thereby to an inoperative position to afford a further extent of depression of said space key.

54. In a typewriting machine, the combination of a carriage, a platen, printing instrumentalities, case shift means, a single key, and means, including carriage feed devices, controlled by said key for effecting an operation of the case shift means and a letter feed movement of the carriage for a distance corresponding to a plurality of letter spaces at each actuation of said key.

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 1st day of July A. D. 1912.

CHARLES E. SMITH.

Witnesses:

E. M. WELLS,

M. F. HANNWEBER.