S. M. MANN.

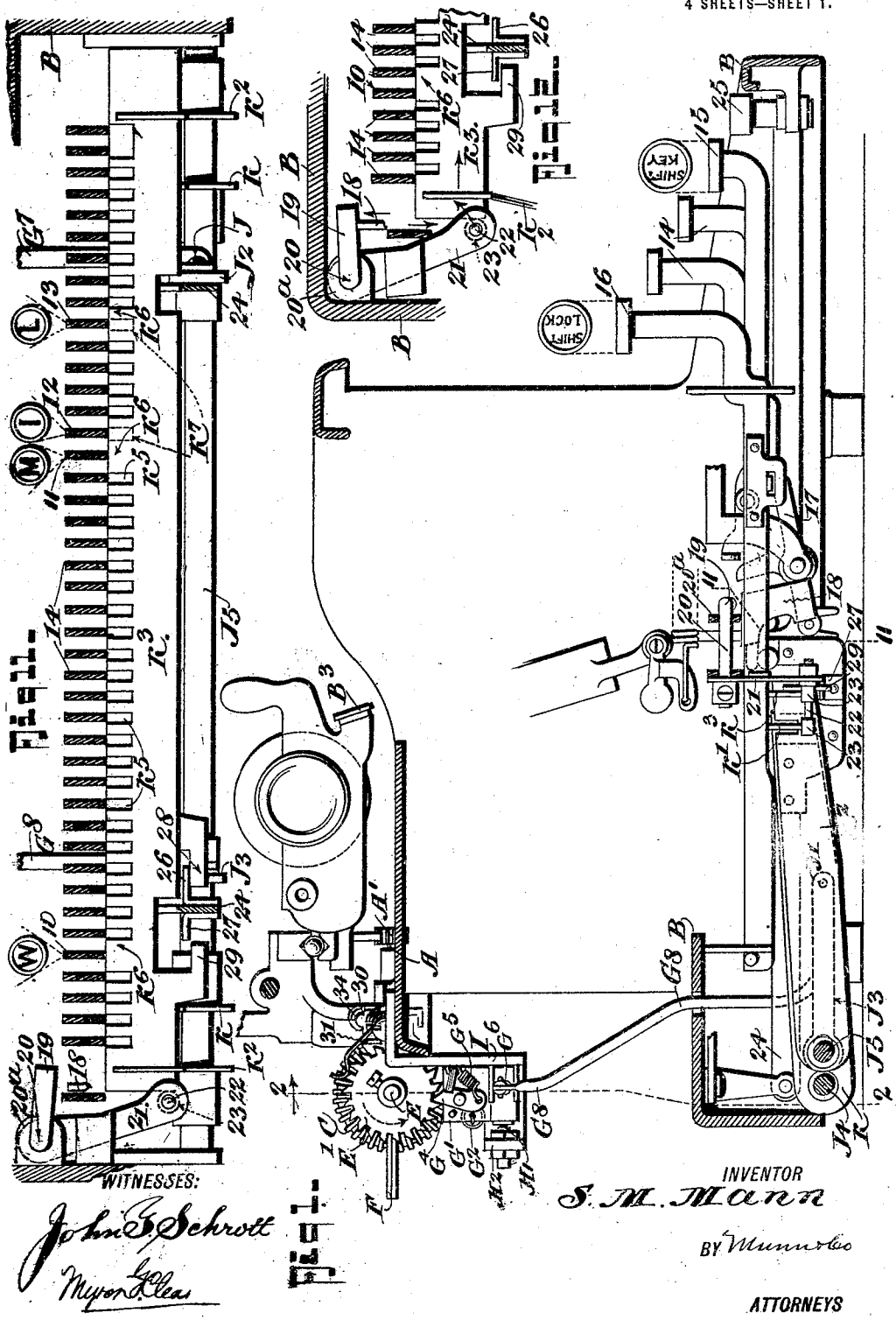
TYPE WRITING MACHINE.

APPLICATION FILED APR. 16, 1915.

1,151,493.

Patented Aug. 24, 1915.

4 SHEETS—SHEET 1.



WITNESSES:

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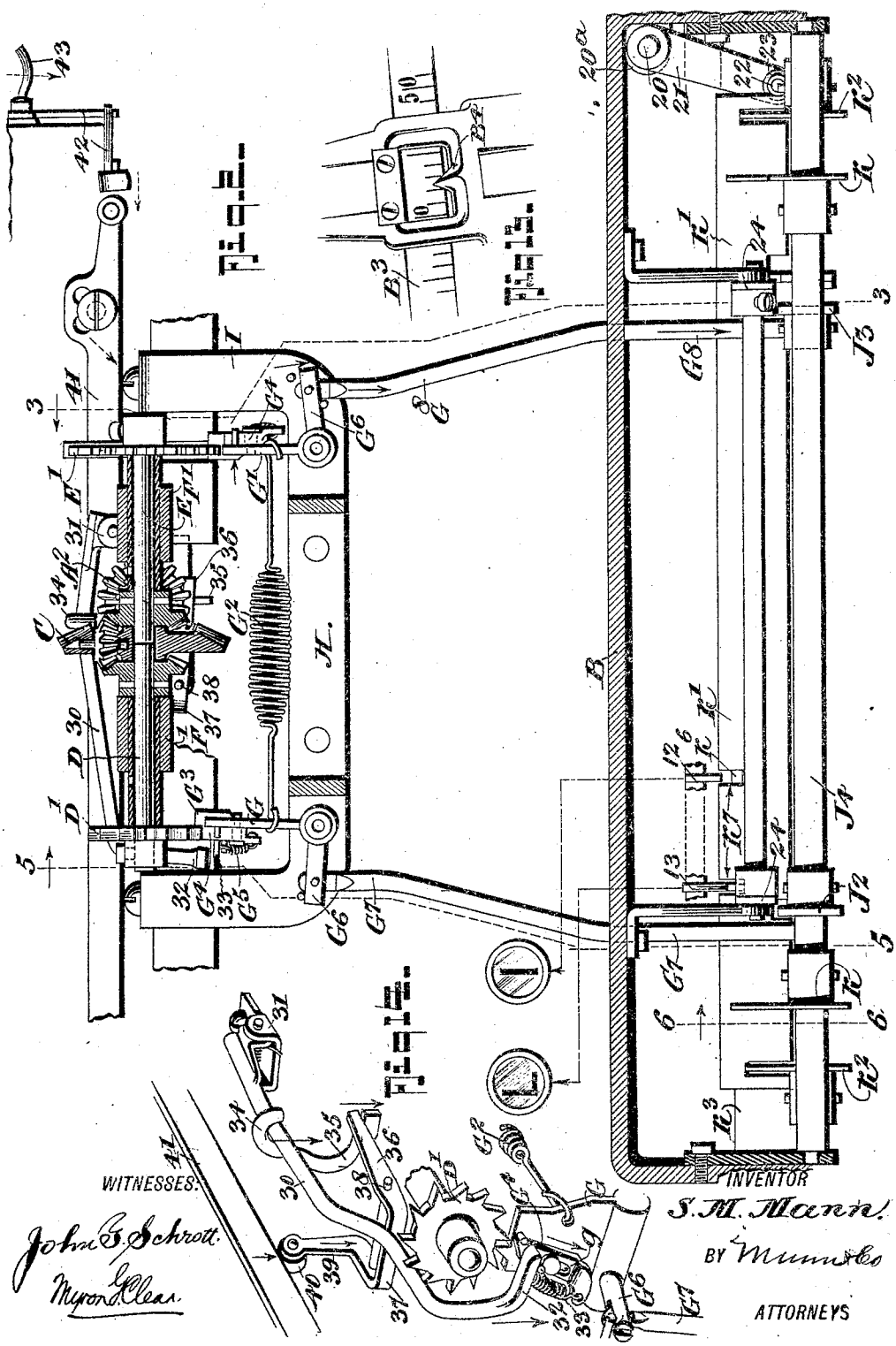
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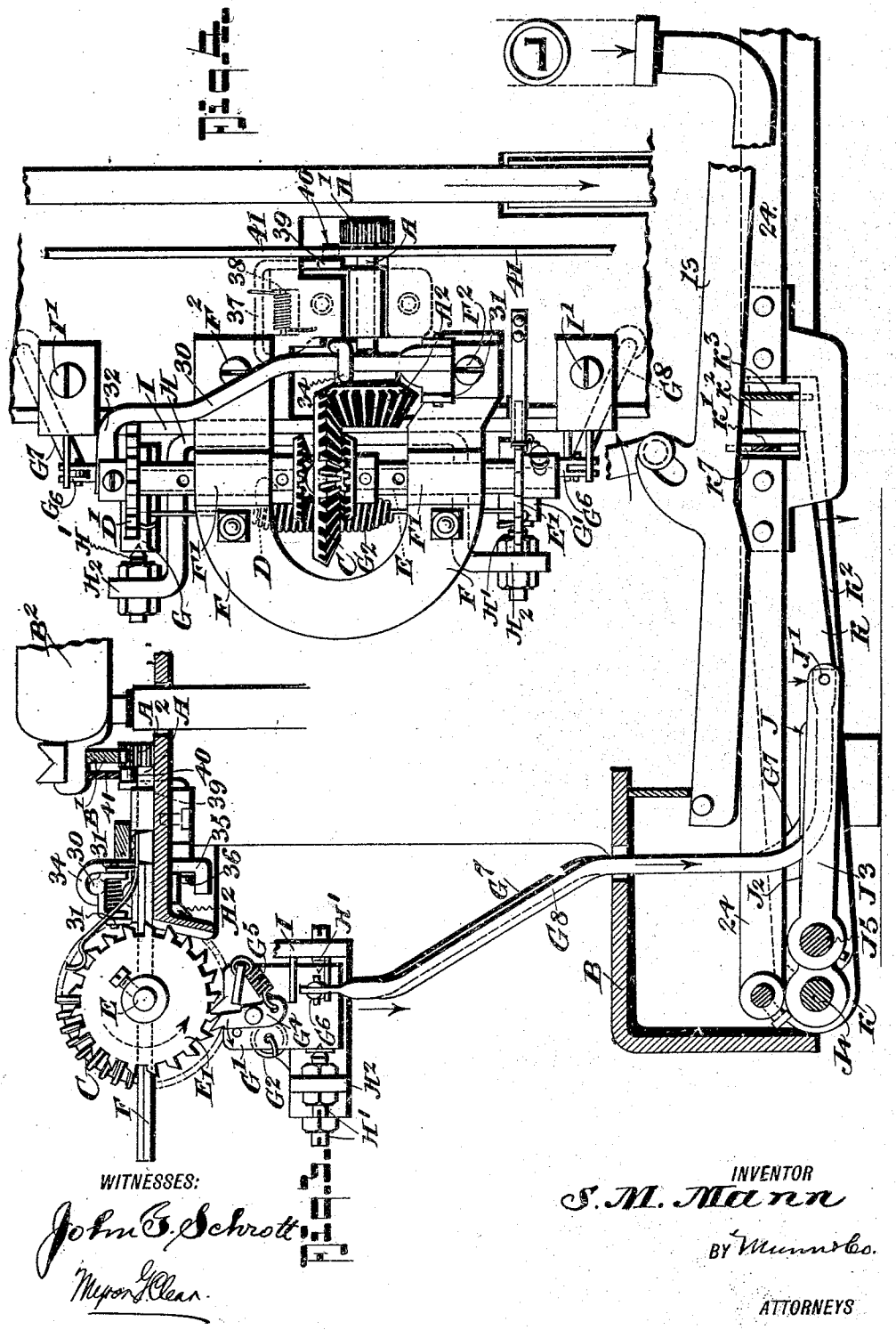
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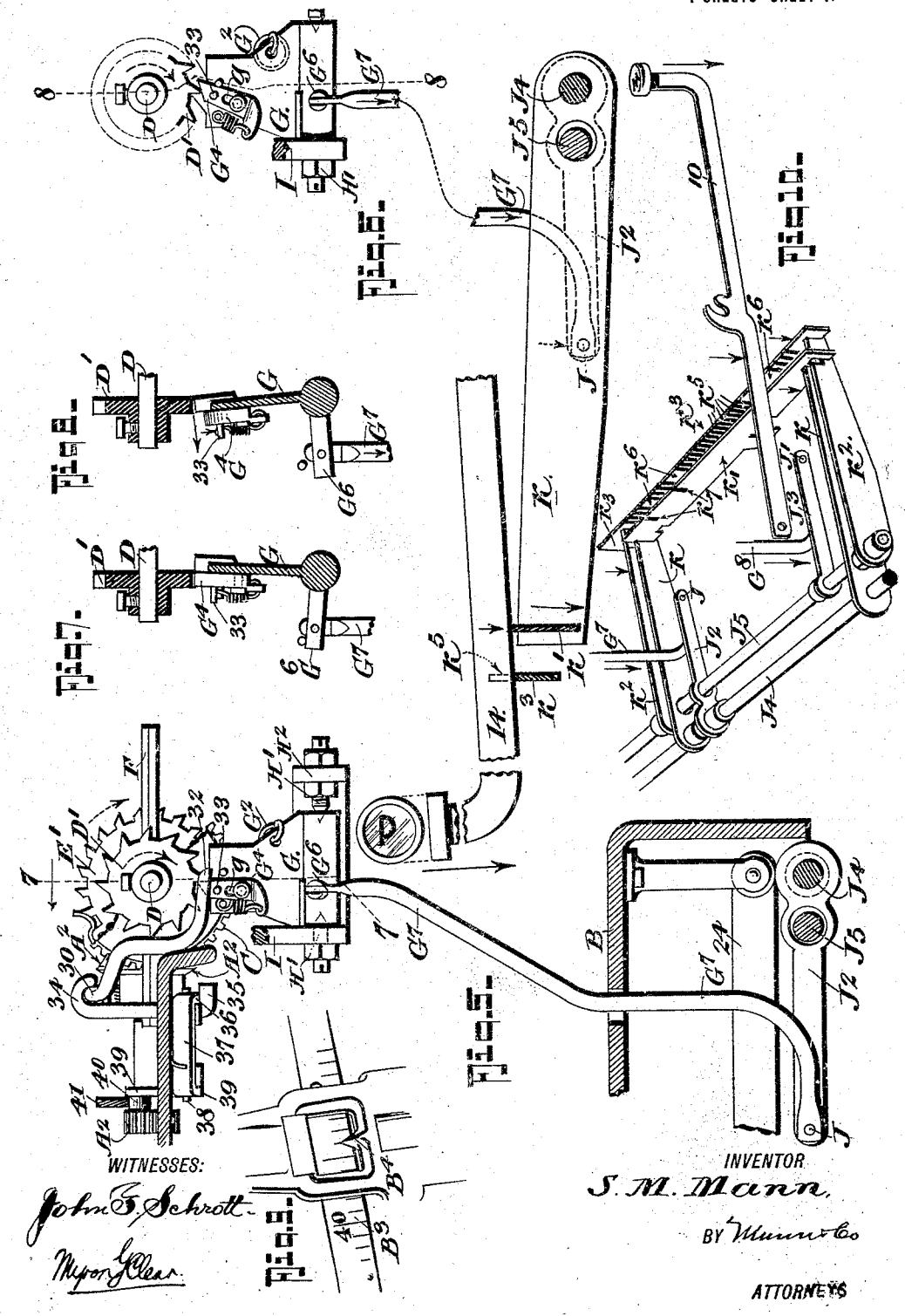
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UNITED STATES PATENT OFFICE.

SYLVANUS M. MANN, OF GREENVILLE, WEST VIRGINIA.

TYPE-WRITING MACHINE.

1,151,493. Specification of Letters Patent. Patented Aug. 24, 1915.

Application filed April 16, 1915. Serial No. 21,864.

To all whom it may concern:

Be it known that I, SYLVANUS M. MANN, a citizen of the United States, and a resident of Greenville, in the county of Monroe and State of West Virginia, have invented a certain new and useful Improvement in Type-Writing Machines, of which the following is a specification.

My present invention relates generally to typewriting machines, and more particularly to typewriting machines including variable spacing means, my object being to provide means whereby three different spacings may be accomplished, one of which is equal to the ordinary spacing between letters, and the other two of which are respectively one-half of the usual spacing and one and one-half times the usual spacing.

A further object of my invention is to accomplish the above by a novel and simple arrangement of parts, bringing about a minimum change in the arrangement and operation of the parts of certain standard typewriting machines.

A still further object of my invention is to accomplish the above variable spacings by means of two escapement shafts, together with means whereby they may be either independently operated or operated in unison, one of the escapement shafts controlling the full and usual spacing and the other controlling the half spacing.

A further object of my invention is to provide in connection with the above means, other means actuated by the setting of the shift lock whereby capitals will be spaced one and one half times the usual spacing in typewriters.

A still further object of my invention is to provide certain simple and inexpensive connections controlled by the carriage release key whereby to withdraw the controlling pawl of one of the escapements and thus permit the carriage to be moved freely in either direction.

These objects, and the advantages resulting from my invention, will be better understood by reference to the following description in which the several parts are described particularly in connection with the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a vertical longitudinal section through a typewriting machine, embodying my invention. Fig. 2 is a vertical cross section therethrough taken substantially on the line 2—2 of Fig. 1, with one of the keys depressed. Fig. 3 is a detail cross section taken therethrough substantially on line 3—3 of Fig. 2, with one of the keys depressed. Fig. 4 is a plan view of the parts shown in Fig. 3. Fig. 5 is a detail section taken therethrough substantially on line 5—5 of Fig. 2. Fig. 6 is a diagrammatical section taken therethrough substantially on line 6—6 of Fig. 2. Figs. 7 and 8 are detail vertical sections, taken respectively on line 7—7 of Fig. 5 and line 8—8 of Fig. 6, through the escapement mechanism controlling full spaces. Fig. 9 is a detail perspective view of a part of the carriage scale, and the front indicator, indicating the normal advancement of the carriage under full spacing. Fig. 10 is a diagrammatical perspective view illustrating the two escapement controlling bars and a single key lever capable of simultaneously moving both of these bars. Fig. 11 is a detail vertical cross section taken through the lower part of the machine, substantially on line 11—11 of Fig. 1. Fig. 12 is a view similar to a portion of Fig. 11, illustrating the two escapement controlling bars, shifted lengthwise by the setting of the shift lock. Fig. 13 is a perspective view illustrating similar parts shown in Fig. 9, in this instance moving under control of the half spacing, and Fig. 14 is a detail perspective view illustrating the action of the carriage releasing parts.

Referring now to the drawings, it will be plainly seen from Figs. 2, 3, and 4 in particular, that the usual carriage control shaft A which is journaled centrally of the upper rear portion of the frame B of the machine and is provided at its inner end with a pinion A′ below and in engagement with the rack B′ at the rear of the movable carriage B^2, is, in accordance with my invention, provided at its outer rear end with a bevel gear A^2, in mesh with the large gear, also beveled, of a differential C, connecting the inner contiguous ends of the two escapement shafts D and E which my invention provides.

The escapement shafts D and E are mounted in axial alinement through bearings F′ of a rearwardly projecting U-shaped support F, the forward ends of which are secured upon the upper rear portion of the frame B of the machine, as seen at F^2, par-

ticularly in Fig. 4, upon relatively opposite sides of the main controlling shaft A, with respect to which the escapement shafts D and E extend at right angles. These escapement shafts D and E are respectively provided at their outer ends with escapement wheels D′ and E′, the teeth of the escapement wheel D′ being spaced apart in accordance with the spacing of the teeth of the usual escapement wheel, whereby when actuated, to permit of a full spaced shift of the carriage B^2. On the other hand, as will be best seen by comparison of the escapement wheels D′ and E′ in Fig. 2, the teeth of the escapement wheel E′ are spaced a distance of one half the spacing of the teeth of escapement wheel D′ whereby when actuated to permit of but a half space shift of the carriage B^2. This may be plainly inferred from Figs. 9 and 13, in the former figure of which the scale indicator B^4 is at a full space mark of the carriage scale B^3, while in Fig. 13, the indicator B^4 is at a half space or a point halfway between the full space mark of the scale B^3, these results being respectively had by actuation of the escapement wheels D′ and E′.

The actuation of escapement wheels D′ and E′ is controlled by pawl carrying plates G and G′, supported in upright position and laterally spaced relation, in needle bearings H′ at the relatively opposite rearwardly offset ends H^2 of a bracket H secured to the central lower portion of a depending U-shaped supporting frame I, the upper ends of the extensions of which are bent forwardly upon, and secured to, the rear upper portions of the main frame B, as seen at I′, particularly in Fig. 4, beyond the secured ends of the first mentioned U-shaped support F. The pawl carrying plates G and G′ which swing laterally upon their needle bearings H′ are connected by a retractile spring G^2 controlling both of them and operating to normally hold the same in inoperative position, and each of these plates is provided with a stationary pawl G^3 and a movable pawl G^4, the latter being controlled by a spring G^5 as usual. Each of these plates G and G′ is also provided with a laterally projecting arm G^6, the arm of plate G being pivotally connected to the upper end of a vertically extending connecting rod G^7 and the arm of plate G′ being similarly connected to the upper end of a connecting rod G^8. Thus it will be seen that when the connecting rod G^7 is drawn downwardly and the controlling plate G rocked on its bearings thereby, the escapement wheel G′ will be released a single notch, permitting a full space movement of the carriage B^2, and it will likewise be seen that when the connecting rod G^8 is drawn downwardly, the controlling plate G′ will be rocked on its bearings, releasing the escapement wheel E′ a full notch which results in a half space movement of the carriage B^2. It is just as plain, furthermore, that when both of the connecting rods G^7 and G^8 are lowered at the same time, release of both of the escapement wheels D′ and E′ a single notch each is communicated through the differential C to effect a movement of the carriage B^2 through a space and a half.

The lower ends of the connecting rods G^7 and G^8 extend downwardly into the base of typewriter frame A, and are respectively connected at J and J′ by pivots to the forward ends of arms J^2 and J^3, these arms being respectively connected at their rear ends in a rigid manner to forward and rear transverse rock shafts J^4 and J^5. To the shaft J^4 are rigidly connected the rear ends of a pair of spaced forwardly extending arms K, to the forward ends of which arms are connected the end portions of a transverse escapement controlling bar K′ and to the shaft J^5 are similarly connected the rear ends of forwardly extending arms K^2, extending parallel with the arms K and supporting at their forward ends, the transverse escapement controlling bar K^3, spaced forwardly beyond, and extending parallel with, the bar K′ as best seen by reference to Figs. 3 and 10. Downward movement of the controlling bar K′ thus rocks the shaft J^4, which, through the connecting rod G^7, actuates the escapement E′, while downward movement of the controlling bar K^3, rocks the shaft J^5 which, through the connecting rod G^8 actuates the escapement E′.

By reference to Figs. 1, 4, 10, and 11 in particular, it will be seen that the controlling bars K′ and K^3 extend transversely below the series of key levers and that the bar K^3 has vertical slots K^5 in its upper edge which, in its normal position as shown in Fig. 11, are alined beneath, and adapted to receive, each of the key levers for the keys of the key board with the exception of the key levers of the keys W, M, I and L, the blank spaces K^6 beneath these particular key levers as plainly shown in Fig. 11, resulting in depression of the bar K^3 when either of the key levers mentioned is depressed. On the other hand, the controlling bar K′ is provided with but two slots K^7 which, as shown in Fig. 10, and also in dotted lines in Fig. 11, are alined, in the normal position of this bar, below the key levers for the keys I and L alone. Thus, in the normal position of the controlling bars K′ and K^3, the levers 10 and 11 of keys W and M respectively, which are of abnormal size, will actuate or lower both of the controlling bars while the levers 12 and 13 of the keys I and L respectively will, being movable in the slots K^7 of the bar K′, actuate the bar K^3 alone. On the other hand, the levers 14 of the various other keys of the machine

will, being movable into the slots K^5 of the bar K^3, actuate the bar K' alone. The result is such that when the abnormally large letters W and M are written, the carriage B^2 is spaced one and one-half the usual spacing, while when the keys I and L are depressed, the carriage is spaced only one half the usual spacing, depression of all of the other levers and keys of the typewriter resulting in the usual whole spacing. Depression of the usual shift keys, such as shown at 15 in Fig. 1, does not, in my invention affect the foregoing operation as far as the variable spacing of the carriage is concerned, but when the shift lock 16 is depressed, the capitals are all spaced one and one half times the usual spacing by the means to be now described.

As best seen in Figs. 1, 11, and 12, the lever 17 of the shift lock 16 has an added part adjacent its inner end, in the form of an upright bearing arm 18, adapted, when the shift lock is depressed, to bear upwardly against one laterally and inwardly extending arm 19 of a lever 20 journaled in a bracket 20^a at one side of the frame of the typewriting machine, the opposite end of which lever has a depending arm 21 carrying a rearwardly projecting horizontal pin 22 provided with rollers 23 bearing against one end of the transverse slotted controlling bars K' and K^3. Thus when the shift lock is depressed, arm 18 bearing upwardly against arm 19 of lever 20, rocks the lever, throwing the lower end of its arm 22 to the right in Fig. 11, whereby to shift the controlling bars K' and K^3 longitudinally to the right, such shifting movement being permitted through sufficient flexibility of the carrying arms K and K^2, and resulting in movement of the slots K^6 and K^7 of the two controlling bars out of alinement with the key levers so that each of the key levers when depressed engages both of the controlling bars K' and K^3, and upon depressing both of these controlling bars will permit of a spacing movement of the carriage one and one half times that of the ordinary full space. It will also best be seen by reference to Figs. 11 and 12, that one of the levers 24 of the spacing bar 25 is provided with a pair of side angle pieces 26 and 27, the angle piece 26 normally engaging and projecting upon a depending laterally extended arm 28 of the controlling bar K' so that upon depression of the spacing bar 25, the controlling bar K' will be depressed permitting a full spacing movement of the carriage. It will also be seen, however, that the controlling bar K^3 is provided with a depending projection or arm 29 extending in a relatively opposite direction to the arm 28 of bar K', and which, though normally out of engagement with the angle piece 27 of the spacing bar lever 24 before mentioned, is movable beneath the same when the two controlling bars K' and K^3 are shifted longitudinally to the right under control of the depression of the shift lock 16, so that when so positioned as shown in Fig. 12, depression of the spacing bar 25, causes lowering movement of each of the controlling bars K' and K^3 whereby in this position of the parts, depression of the spacing bar 25 causes spacing of the carriage one and one half times the usual full space thereof, to accord with the increased spacing of the capitals as before described.

Referring now to Figs. 2, 4, and 14, it will be seen that the movable pawl G^4 of the plate G for actuation of the escapement wheel G', is provided with a slot g, best seen in Figs. 5 and 14, permitting its lengthwise movement away from the ratchet wheel or escapement G' upon depression of a lever 30, pivoted at one end in a bracket 31 secured upon the upper rear portion of the typewriter frame, and having a downwardly bent and rearwardly projecting rear end 32 engaging a pin 33 of the pawl G^4 just mentioned. Lever 30 is intermediately engaged by the upper hooked end 34 of a vertical link 35, the lower end of which is engaged by one laterally projecting arm 36 of a lever 37 intermediately pivoted upon a pin 38 and having its opposite end 39 projecting upright and provided with a roller 40 disposed beneath the usual depressible carriage release rail 41 which is depressed as usual through connections 42 from the carriage release lever 43. Thus by releasing the movable pawl G^4 of one of the escapement wheels, the carriage may be freely moved in either direction as desired.

Thus from the foregoing construction and arrangement of parts, it will be seen that I provide simple and inexpensive means whereby to promote a variable spacing of the carriage, enabling the same to space the ordinary full space for letters of ordinary size, half spaces for letters of small size, such as the letters I and L, and spaces of one and one half times the usual full space for letters of large size such as W and M. It will also be seen that I provide such a variable spacing operative as well when the shift keys are depressed, and simple means whereby the carriage is released a full space when the space bar is depressed. It will also be seen that I provide simple and effective means whereby to space all capitals the maximum space of one and one half times the usual full space when the shift lock is depressed, not only when any of the keys are depressed, but as well when the space bar is depressed. It will also be seen that in spite of the several added features I have by simple and effective means, provided for the usual release of the carriage for free movement in either direction, and have accomplished the several advantages incident

to the foregoing construction and arrangement and operation of parts, without detracting in any way from the practical and successful operation of the other parts of the typewriter not mentioned.

I claim:—

1. In a variable feed mechanism for typewriters, the combination with a carriage control shaft, of a pair of escapement mechanisms consisting of horizontal laterally extending and axially alined escapement shafts, a differential connecting the inner adjacent ends of said shafts with the carriage control shaft, escapement wheels carried by the outer ends of said escapement shafts and having differently spaced teeth, a frame depending below the said escapement shaft, a pair of pawl carrying plates having bearings in the said frame, pawls carried by the plates and engaging the respective escapement wheels, and key actuated means for controlling said escapement mechanisms simultaneously with, and independently of, one another.

2. In a variable feed mechanism for typewriters, the combination with a carriage control shaft, of a pair of escapement mechanisms consisting of horizontal laterally extending and axially alined escapement shafts, a differential connecting the inner adjacent ends of said shafts with the carriage control shaft, escapement wheels carried by the outer ends of said escapement shafts and having differently spaced teeth, a frame depending below the said escapement shaft, a pair of pawl carrying plates having bearings in the said frame, pawls carried by the plates and engaging the respective escapement wheels, key actuated means for controlling said escapement mechanisms simultaneously with, and independently of, one another, and means actuated by the shift lock of the typewriter whereby to prevent independent control of the said escapement mechanisms.

3. In a variable feed mechanism for typewriters, the combination of a pair of escapement mechanisms, a differential connecting said mechanisms together and with the carriage control shaft, transverse depressible controlling bars extending below the typewriter key levers and connected to the respective escapement mechanisms, and adapted to be depressed at the same time by depression of certain of the key levers, one of said controlling bars having slots into which certain other key levers are depressible, the other bar having slots into which still other key levers are depressible, means actuated by the shift lock for shifting the said controlling bars longitudinally to move their slots out of alinement with the key levers, one of said controlling bars having an arm constantly engaging one of the space bar levers of the typewriter, and the other controlling bar having an arm movable to engage the said space bar lever when the controlling bars are shifted.

4. In a variable feed mechanism for typewriters, the combination of a pair of escapement mechanisms, a differential connecting said mechanisms together and with the carriage control shaft, transverse depressible controlling bars extending in spaced parallel relation below the typewriter key levers, said bars being longitudinally shiftable and having connection with the respective escapement mechanism, one of said bars having slots into which certain of the key levers are depressible, and the other bar having slots into which other key levers are depressible, a lever having an arm adjacent one end of the said bar, and an arm secured to the shift lock lever and engaging said bar lever whereby to move the same against the controlling bars and shift the latter to move their slots out of alinement with the said key levers.

5. In a variable feed mechanism for typewriters, the combination of a pair of escapement mechanisms, a differential connecting said mechanisms together and with the carriage control shaft, transverse depressible controlling bars extending in spaced parallel relation below the typewriter key levers, said bars having connections with the respective escapement mechanisms permitting longitudinal shifting movement of the bars, and being adapted to be depressed at the same time by depression of certain of the key levers, one of said bars having slots into which certain other key levers are depressible, and the other bar having slots into which still other key levers are depressible, and means actuated by the shift lock lever of the typewriter whereby to shift the said controlling bars longitudinally to move their slots out of alinement with the said key levers, for the purpose described.

6. In a variable feed mechanism for typewriters, the combination of a pair of escapement mechanisms, a differential connecting said mechanisms together and with the carriage control shaft, key actuated means for normally controlling said escapement mechanisms simultaneously, and independent of one another, and means actuated by the shift lock of the typewriter whereby to prevent independent control of the said escapement mechanisms.

7. In a variable feed mechanism for typewriters, the combination with a carriage control shaft, of a gear secured upon the rear end of the said shaft, a pair of horizontal laterally extending and axially alined escapement shafts, a differential connecting the inner ends of said escapement shafts with the gear of the control shaft, escapement wheels carried by the outer ends of said escapement shafts and having differently spaced teeth, a frame depending below the

said escapement shaft, a bracket secured to the frame and having rearwardly offset end portions, a pair of pawl carrying plates having bearings in said offset bracket ends, and in portions of said frame, a spring connecting the said plates together and normally holding the same in inactive position, pawls carried by the plates and engaging the respective escapement wheels, and controlling means actuated by the typewriter keys and connected to the respective escapement mechanisms, whereby the latter may be independently and simultaneously controlled.

8. In a variable feed mechanism for typewriters, the combination of a pair of horizontal laterally extending and axially alined escapement shafts, a differential connecting the inner ends of said shafts with the carriage control shaft of the typewriter, escapement wheels carried by the outer ends of said escapement shafts and having differently spaced teeth, laterally rocking pawl carrying members or plates having bearings below the respective escapement wheels, and having connections normally holding the same in inactive positions, pawls carried by the said plates and engaging the escapement wheels, and key actuated controlling means having connection with the respective pawl carrying plates, for the purpose described.

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Witnesses:
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C. S. BALLARD.