(No Model.) 3 Sheets—Sheet 1.

H. JARVIS.

TYPE WRITING MACHINE.

No. 536,588. Patented Mar. 26, 1895.

Fig. 1.

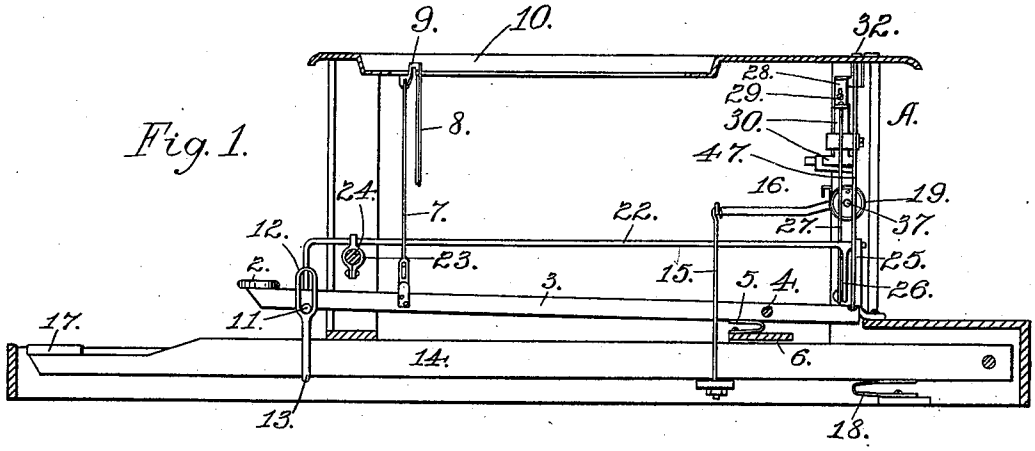


Fig. 2.

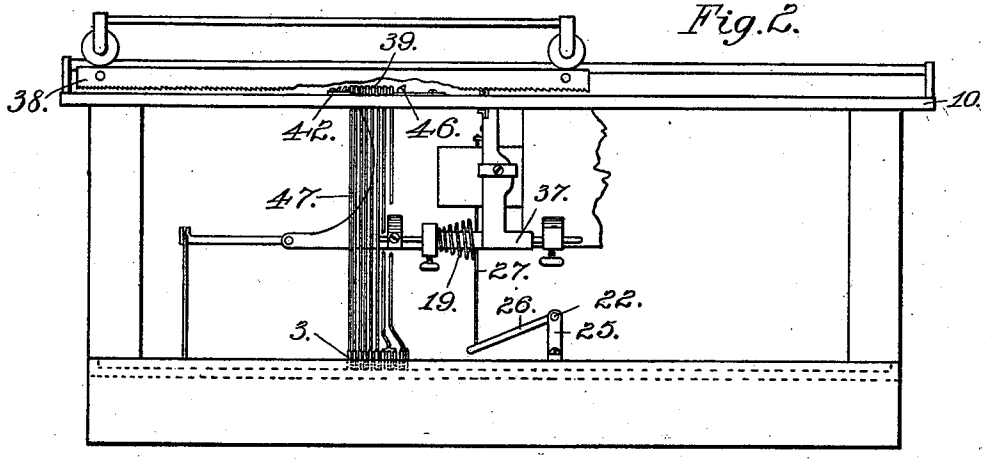
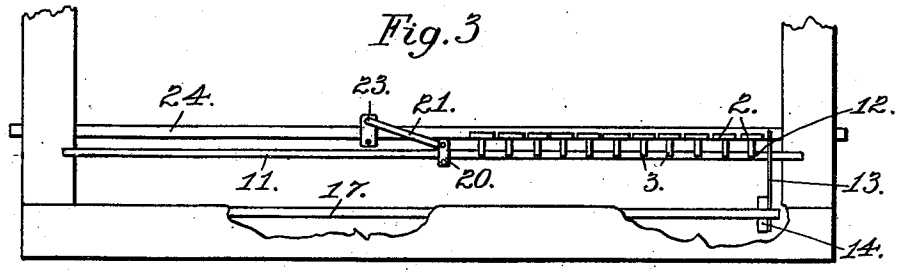


Fig. 3



Witnesses:
P. G. Bradbury.
W. C. Swift.

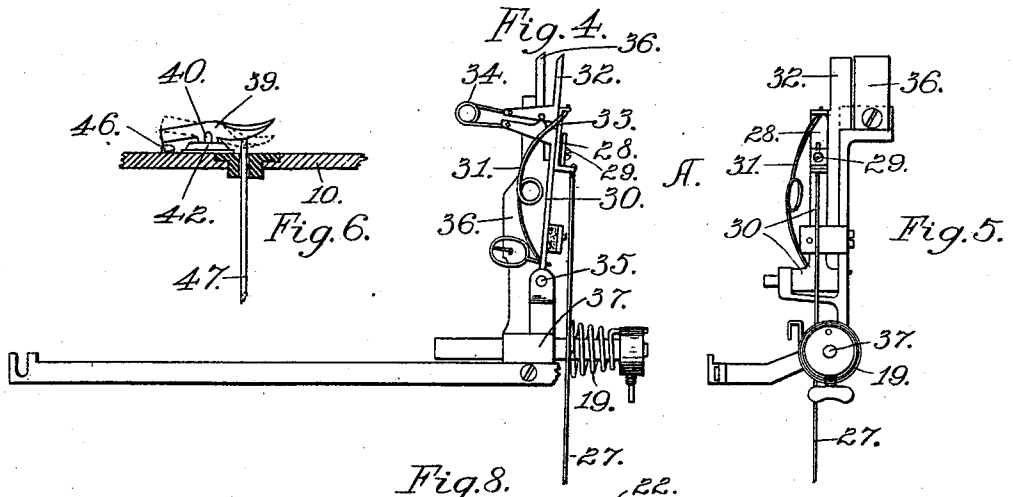
Inventor:
Harold Jarvis:
per: F. D. Morris
Attorney.

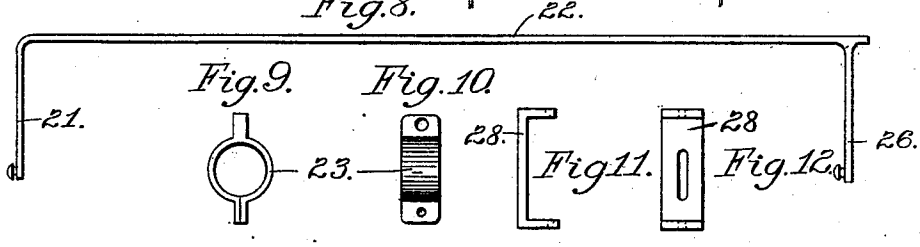
(No Model.) 3 Sheets—Sheet 2.

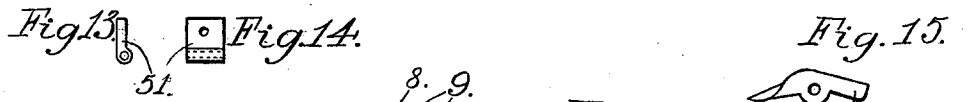
H. JARVIS.

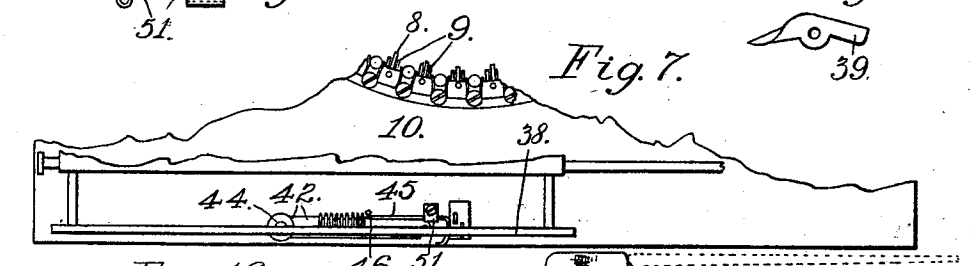
TYPE WRITING MACHINE.

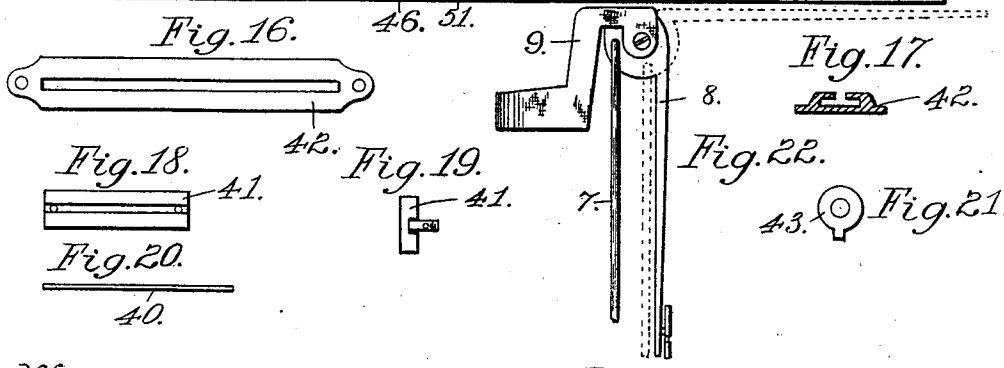
No. 536,588. Patented Mar. 26, 1895.











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Inventor:
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per: F. D. Merrill
Attorney.

(No Model.) 3 Sheets—Sheet 3.

H. JARVIS.

TYPE WRITING MACHINE.

No. 536,588. Patented Mar. 26, 1895.

Fig. 25.

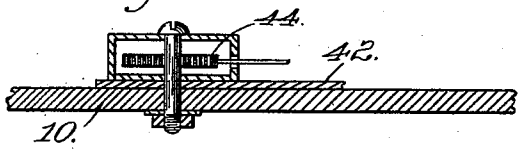


Fig. 23.

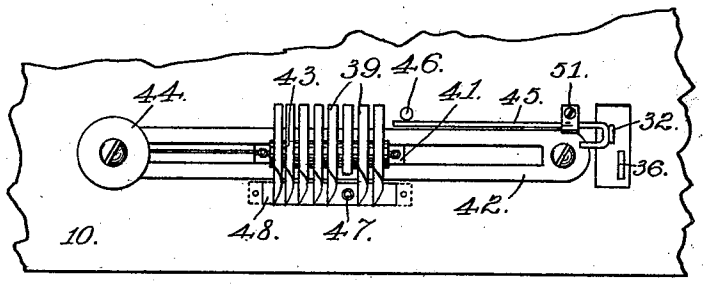


Fig. 28.

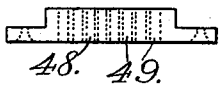


Fig. 29.

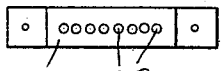


Fig. 24.

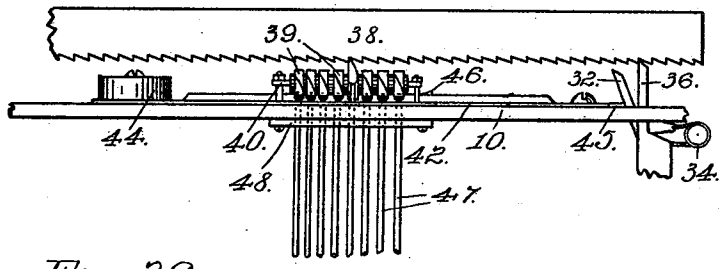


Fig. 26.

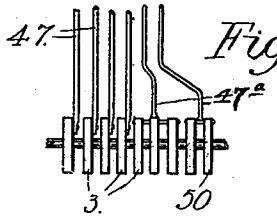
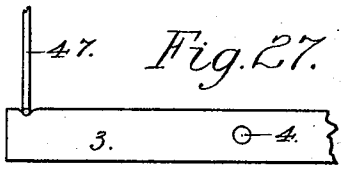


Fig. 27.



Witnesses:
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A. S. Johnson

Inventor:
Harold Jarvis.
per: F. D. Merwin
Attorney.

UNITED STATES PATENT OFFICE.

HAROLD JARVIS, OF ST. PAUL, MINNESOTA.

TYPE-WRITING MACHINE.

SPECIFICATION forming part of Letters Patent No. 536,588, dated March 26, 1895.

Application filed May 14, 1894. Serial No. 511,175. (No model.)

To all whom it may concern:

Be it known that I, HAROLD JARVIS, of St. Paul, Ramsey county, Minnesota, have invented certain Improvements in Type-Writers, of which the following is a specification.

My invention relates to improvements in typewriters, its object being to provide means for printing a whole word or phrase at a single stroke, and thereby save time and labor in the use of the machine.

To this end my invention consists of additional keys, levers, type bars carrying the frequently used words and phrases and an automatic spacing mechanism, all suitably secured to the ordinary typewriter so that the operator, when desiring to print one of these words or phrases in the course of his work, can, by striking the proper key, print such word or phrase with proper spacing upon the paper on the platen.

My invention further consists in the construction and combination hereinafter particularly described and claimed.

In the accompanying drawings forming part of this specification; Figure 1 is a vertical, longitudinal section through the frame of a typewriter, having thereon only my improved device and those parts of the usual mechanism of the machine necessary for the operation of said device. Fig. 2 is a rear elevation of the same. Fig. 3 is a front elevation of the lower portion of the same machine, showing the additional keys and a portion of the spacing mechanism thereof. Figs. 4 and 5 are front and side elevations of the ordinary spacing mechanism, having applied thereto the accompanying parts of my improvement. Fig. 6 is a detail view of one of the sliding spacing dogs of my device. Fig. 7 is a plan view of the upper rear portion of a typewriter having thereon parts of my improvement. Fig. 8 is a view of the release shaft used in transmitting motion from the spacing rod supporting the keys to the spacing mechanism at the rear of the typewriter. Figs. 9 and 10 are side and front elevations of the clasp bearing secured on the brace at the front of the typewriter. Figs. 11 and 12 are front and side elevations of the release plate located on the pivoted spacing dog. Figs. 13 and 14 are elevation and plan view of the guide secured on the top plate of the machine for directing the motion of the L rod. Fig. 15 is a side elevation of one of the sliding spacing dogs of my device. Figs. 16 and 17 are plan view and vertical cross section of the guide for the carriage of these dogs. Figs. 18 and 19 are plan view and end elevation of this carriage. Fig. 20 is a view of the rod on which these dogs partly revolve. Fig. 21 is a side elevation of one of the washers arranged between the sliding dogs. Fig. 22 is a side elevation of the type-bar, and bearing for same, of my device. Fig. 23 is an enlarged detail view of that portion of the top plate of the machine, on which are located the sliding dogs and the L rod. Fig. 24 is a rear elevation of the same having additionally the ordinary spacing rack shown in engagement with the dogs. Fig. 25 is a vertical section of the adjustable spring for normally keeping the sliding dog carriage at the more distant end of the guide from the L rod. Figs. 26 and 27 are enlarged detail rear and side elevations of the rear ends of the key levers and of those portions of the lower ends of the sliding dog plungers connected thereto; and Figs. 28 and 29 are side elevation and plan view of the adjustable plate containing the guiding holes for the sliding dog plungers.

The keys 2 of my improved device are arranged at the rear and above the usual keys on key levers 3, pivoted on the horizontal transverse rod 4 at the rear of the machine, and are pressed upward into normal position by the springs 5 secured on the plate 6, fastened horizontally and transversely above the usual key levers of the typewriter. At different points along the key levers 3 are pivotally attached thereto connecting rods 7, also pivotally secured at their other ends to the type bars 8, journaled in the bearings 9 therefor, secured to the under side and inner edge of the circular opening in the top plate 10, forming the basket of the machine. The forward ends of the key levers 3 rest upon the transverse spacing rod 11 which is supported in the socket 12 upon the upper end of the rod 13 secured to the spacing lever 14 of the ordinary machine.

For tipping forward the spacing mechanism A of the machine there is, at the rear of the machine, the connecting rod 15 attached at its lower end to the key lever 3 and spacing

lever 14, and at its upper end to the arm 16. After the depression of the space bar 17 and lever 14, they and the spacing mechanism A, are returned to their normal position by the springs 18 and 19. Pivotally connected to the transverse space rod 11 by the clasp 20 is the arm 21 of the release shaft 22, which shaft is journaled in the clasp bearing 23 on the brace 24 at the front of the machine, and, in the bearing 25 at the rear of the machine, near which rear bearing there extends from this release shaft, the second arm 26. Pivotally attached to the end of this rear arm 26 is the adjustable rod 27, which is connected at its upper end to the slotted release plate 28 movably secured by the screw 29 on the pivoted spacing dog 30. This plate is normally forced upward by the spring 31 to a position in which it holds the upper part 32 of the dog 30 ready for engagement with the spacing rack 38. This part 32, pivoted at 33, tends to tip forward on account of the expansive spring 34 connected to the extremities of the rearwardly extending arms of the two parts of this pivoted dog. The lower part 30 is pivoted at 35 upon the main spacing dog 36 which itself is pivoted at 37 and normally forced backward by the spring 19 as before noted, thereby keeping it engaged with the rack 38.

In order that the carriage may be moved the proper distance for a word or phrase, the sliding dogs 39 are arranged on the horizontal rod 40, mounted in the carriage 41, traveling in the guide 42 secured to the top plate 10 of the machine. Between each of these dogs and on this rod 40 are located the washers 43, the lugs on the washers fitting into the slot in the carriage. The adjustable spring 44 tends to hold this dog carriage 41 at that end of the guide 42 the more distant from the spacing mechanism A. The dogs 39, when in engagement with the rack 38, have their inner ends rocked or tipped downwardly, so as to engage in their travel with the end of the L rod 45, which rod is directed in its movement by the guide 51 secured to the top plate 10 of the machine. The bent arm of this rod 45, upon such engagement with the end of one of the dogs 39, strikes the upper part 32 of the pivoted spacing dog 30 and forces it back to its normal position, from which it had been released by the adjustable rod 27, attached to the rear crank arm 26 of the release arm 22. The dog 39, immediately after striking the L rod, is disengaged from the rack 38 by one end of the dog sliding up the beveled lug 46 secured to the top plate of the machine. There is also located under the outer ends of these dogs a small longitudinally adjustable plate 48 containing vertical holes 49 spaced correspondingly to the dogs for guiding the plungers 47, which extend downwardly to the rear ends of the key levers 3 and are there so connected to them, that, upon the depression of one of the keys 2, the rear end of its lever 3 is elevated and lifts with it the plunger 47, resting thereon, which in turn pushes the dog directly above it into engagement with the spacing rack 38.

Upon key levers operating several words or phrases having the same number of spaces, one common T shaped plunger 47^a rests (see Fig. 26), serving to engage the corresponding dog 39 with the spacing rack. Attached to the lower ends of these plungers are spiral springs (not shown), for quickly returning them to their normal positions after having been lifted. Each of the dogs 39 is normally located at a distance from the end of the L rod 45 corresponding with the length of the word or phrase on the type-bar, which is operated simultaneously and similarly with this dog by the key lever 3 so that the platen carriage is stopped, as has been noted before, by the bent rod 45, spacing dog 30, and rack 38, at just the distance to permit of the proper printing of the succeeding type, word or phrase, with correct spacing.

The double space key lever 50, operates in the same manner as the additional levers already described, but is not connected with any letter or word, its object being to save the movement necessary to make the space between words made up in the ordinary course of writing. This double space key lever being depressed with the unengaged hand at the same instant the last letter of a word is struck, withdraws the pivoted dog from engagement with the rack and simultaneously pushes the two space sliding dog into engagement with the rack, allowing the rack and platen carriage to travel the space for the letter struck, and the space necessary between words, thereby saving the time taken to make the space after an ordinary word has been completed.

To print one of the words or phrases of my improved device one of the additional keys is struck, which depresses the spacing rod, pivoted at the left hand side of the machine, and running transversely underneath the keys, partly revolving thereby the arm of the release shaft attached to the rod. The arm at the rear end of the release shaft makes a similar downward movement, and, by means of the adjustable connecting rod attached thereto, pulls down the slotted release plate that normally keeps the upper part of the pivoted spacing dog in engaging position with the spacing rack; also, upon the striking of this additional key, the spacing rod referred to, resting in the socket on the perpendicular rod attached to the right hand lever of the spacing bar, pushes the lever down in the ordinary way, as when making a space, and thereby pulls the pivoted dog from engagement with the teeth of the spacing rack. The release plate having been pulled down as described, there is nothing to prevent the spring, (one end of which is fastened to the rearwardly extending arm of the pivoted spacing dog, and the other end to the rearwardly extending arm of pivoted dog's upper part, also

pivoted,) from throwing the upper part down against the top plate of the machine, thereby lowering said part so that it will not come in contact with the teeth of the rack on the pivoted dog's return motion. At the same instant the additional key and lever thereof is depressed, as before stated, the plunger fastened to the rear end of the lever beyond its pivoted point, pushes up the corresponding sliding dog into engagement with the rack. As before stated, the release plate has been pulled down and the upper part of the pivoted dog has been thrown down, and, upon the return motion of the pivoted dog, there is nothing to stop the travel of the platen carriage but the partly revolving sliding dogs, one of which has been pushed up into the teeth of the ratchet, as described, necessarily tipping down its other end beyond the pivot through the center of the dog. The sliding dog carriage is now moved quickly by the strong main spring of the platen carriage, and that end of the sliding dog which has been tipped down strikes the L rod, the main part of which rests against that upper part of the pivoted dog which has been thrown down, thereby pushing it back to the perpendicular and, at the same instant, the spring fastened to the top of the release plate, pulls it up into position, thereby holding the upper part of the pivoted dog in place for ordinary writing. The end of the sliding dog, which has been tipped down immediately after striking the L rod as before stated, slides up on the beveled lug, thereby releasing the other end from the teeth of the rack and compelling the dog to resume its normal position, when the sliding dog carriage is immediately returned by the adjustable spring at the end of its guide and the sliding dogs take up their relative positions over their respective plungers, ready for a repetition of the above described movement. The time necessary to complete this movement is a small part of a second, increased or decreased by the travel of the carriage necessary to allow the word printed to take its place on the line with proper spacing.

I claim—

1. In a type-writer, the combination with the carriage and its step-by-step spacing mechanism, of the interchangeable variable spacing mechanism, the keys for disengaging the step-by-step mechanism and actuating the variable spacing mechanism, and the trip for throwing the step-by-step mechanism into engagement with the carriage, automatically operative when the carriage has traveled the distance predetermined by the key operated.

2. In a typewriter, the combination with the carriage and its step-by-step spacing mechanism, of the supplementary series of variable spacing mechanisms, the series of keys corresponding severally with said supplementary spacing mechanisms adapted to simultaneously interchange its supplementary spacing mechanism with the step-by-step spacing mechanism in engagement with the carriage, and the trip for throwing the step-by-step spacing mechanism into reengagement with the carriage, automatically operative when the carriage has traveled the distance predetermined by the substituted supplementary spacing mechanism.

3. In a typewriter, the combination with the carriage and its step-by-step spacing mechanism, of the supplementary series of spacing mechanisms each having a predetermined limit of travel different from the others of the series and greater than a step of the step-by-step mechanism, the keys severally, operatively connected with said series of spacing mechanisms and adapted when depressed to throw its connected mechanism into engagement with said carriage in substitution for the step-by-step spacing mechanism, and the trip for throwing the step-by-step spacing mechanism into reengagement with the carriage, automatically operative by said substitute spacing mechanism on reaching the limit of its travel.

4. In a typewriter, the combination with the carriage and its uniform rack-and-dog spacing mechanism, of the series of sliding dogs each having a predetermined limit of travel different from the others of the series and greater than a step of the uniform spacing mechanism, and adapted to be thrown into engagement with the rack in substitution for the first named dog, and the automatic trip for throwing the first named dog into re-engagement with its rack when the carriage has traveled the distance predetermined by the selected sliding dog.

5. In a type-writer, the combination with its carriage and the spacing mechanism therefor, of key-operated means for throwing said spacing mechanism out of engaging position with said carriage, and other means simultaneously operated by the same key for engaging said carriage, adapted to be carried by said carriage a predetermined distance, and mechanism operated by said last named means at the limit of its travel for restoring said spacing mechanism to engaging position with said carriage.

6. In a type-writer, the combination with its series of single-character keys, the carriage and spacing mechanism, of the series of supplementary keys, the type operated by said supplementary keys of varying dimensions greater than the single character type, the series of sliding dogs respectively connected with said supplementary keys and adapted when actuated to engage said carriage, said dogs having a permissible sliding movement corresponding to the length of the related type, means operated by any of said supplementary keys for throwing the spacing mechanism out of engagement with said carriage, and automatic means operated by said sliding dogs on reaching the limit of their travel for restoring said spacing mechanism to engaging position with the carriage.

7. In a typewriter, the combination with the

series of type of uniform dimensions, their respective operating keys, the platen carriage, and the uniform spacing mechanism, of the series of supplementary type of varying and greater dimensions than said first type, their respective supplementary keys, the variable spacing mechanism, operated by said supplementary keys and the means operated by said supplementary keys for throwing the uniform spacing mechanism out of action during the action of the supplementary spacing mechanism.

8. In a type-writer, the combination with the series of type of uniform dimensions, their operating keys, the carriage, the uniform spacing mechanism operative by any of said keys, the series of supplementary type of varying and greater dimensions than the said first named type, their operating supplementary keys, a variable spacing mechanism operative by any of said supplementary keys, and means operated by any of said supplementary keys for throwing out of action the uniform spacing mechanism during a predetermined travel of the carriage corresponding to the dimensions of the type connected to the operated key.

9. In a type-writer, the combination with the spacing rack and its pivoted dog, of the sliding dog, the key operated means for throwing said sliding dog into engagement with said rack, means also operated by said key for throwing the pivoted dog out of engaging position with said rack, and means operated by said sliding dog when it shall have been carried by the movement of the spacing rack a predetermined distance, for restoring said pivoted dog to engaging position so as to stop the travel of said rack.

10. In a type-writer, the combination with the key, its pivoted lever, the type bar, the rod connecting it and the key lever, the spacing rack and the pivoted dog for engaging said rack, of means operated by the depressing of the key to remove said pivoted dog, the means operative by said key for throwing said sliding dog into engagement with said rack when said pivoted dog is thrown out of operative position, and automatic means actuated by said sliding dog when it shall have traveled a predetermined distance for restoring the pivoted dog to operative position.

In testimony whereof I affix my signature in presence of two witnesses.

HAROLD JARVIS.

Witnesses:
W. C. SWIFT,
F. BRADBURY.