L. D. BROUGHTON.

TYPE WRITING MACHINE.

APPLICATION FILED OCT. 4, 1910.

1,067,402.

Patented July 15, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

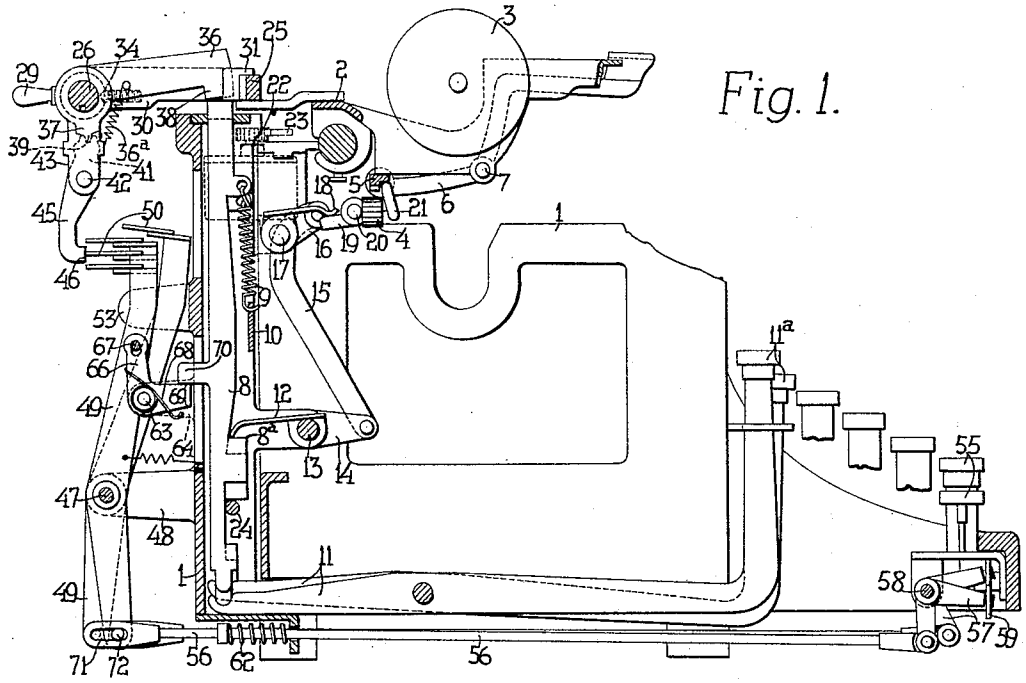
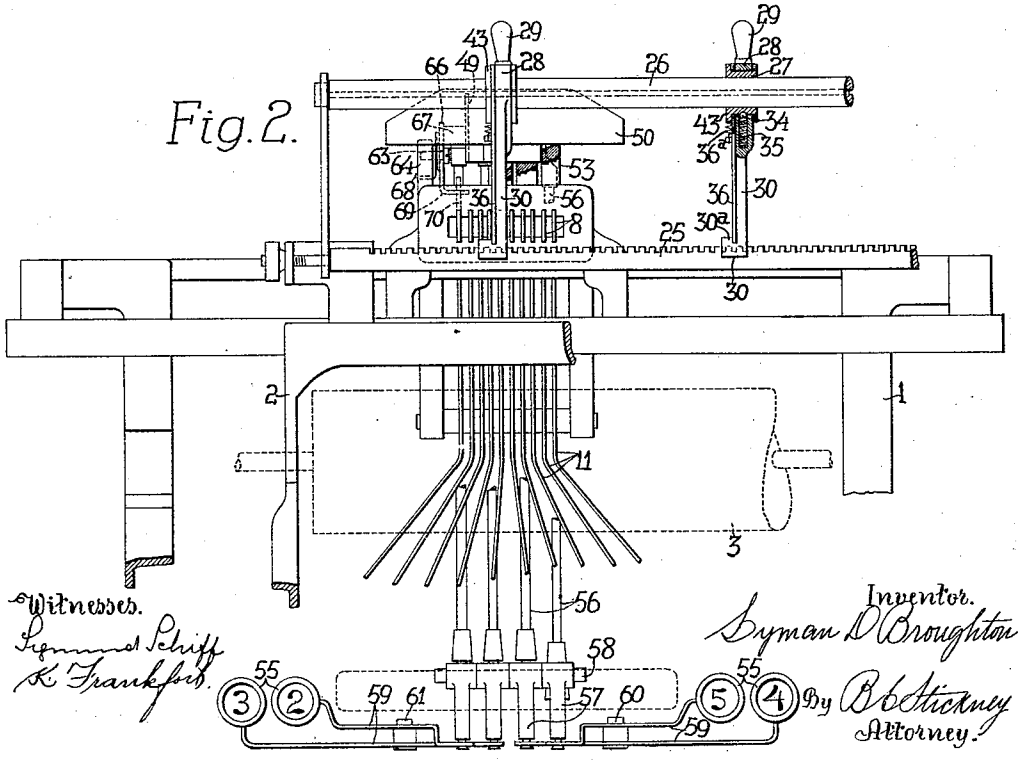


Fig. 2.



Witnesses.
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3 SHEETS—SHEET 2.

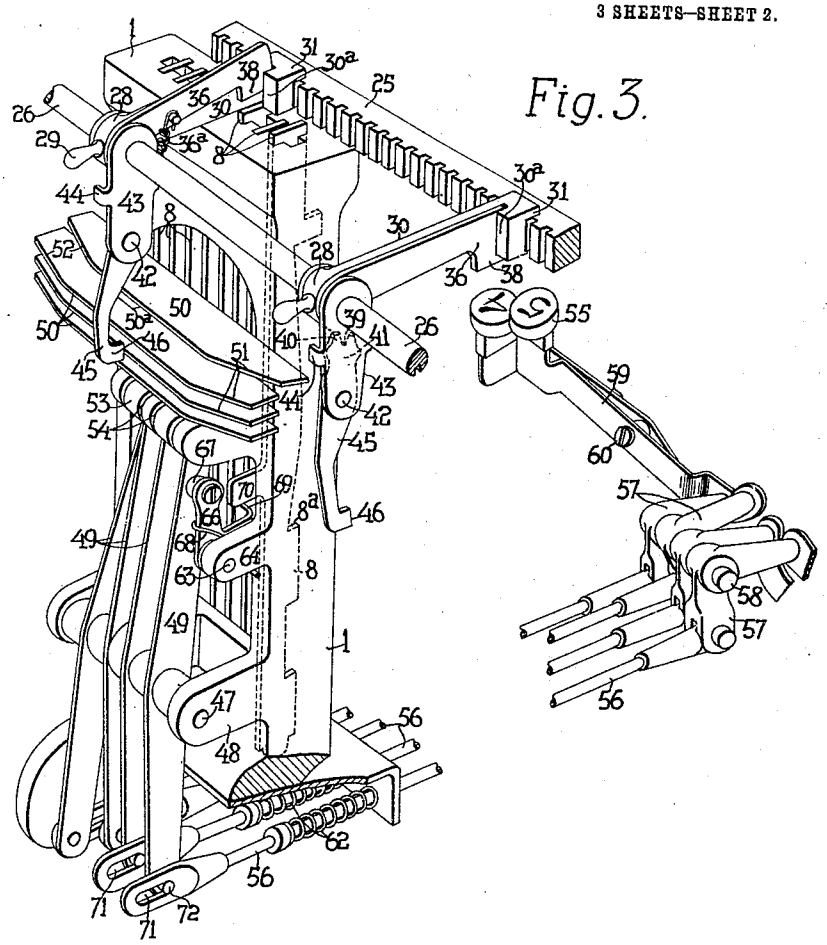


Fig. 3.

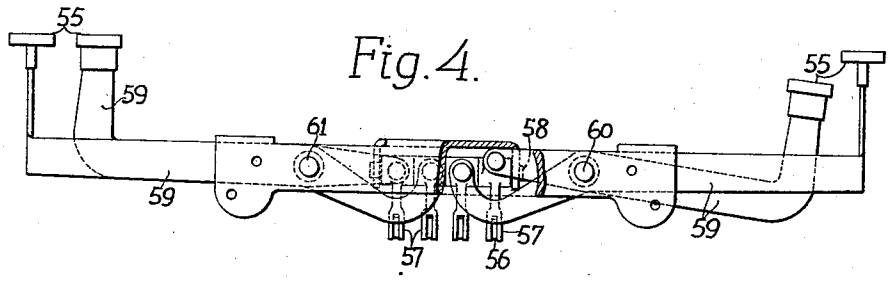


Fig. 4.

Witnesses.

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3 SHEETS—SHEET 3.

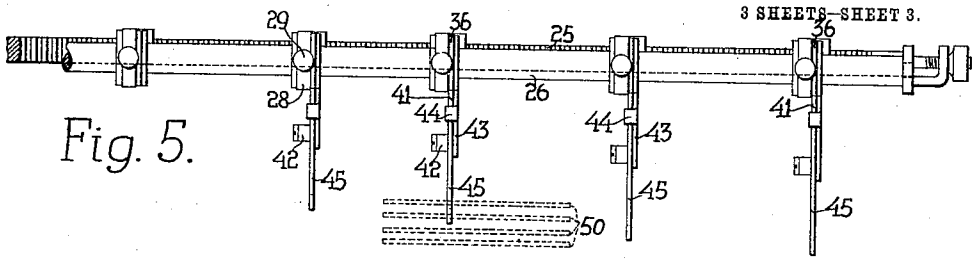


Fig. 5.

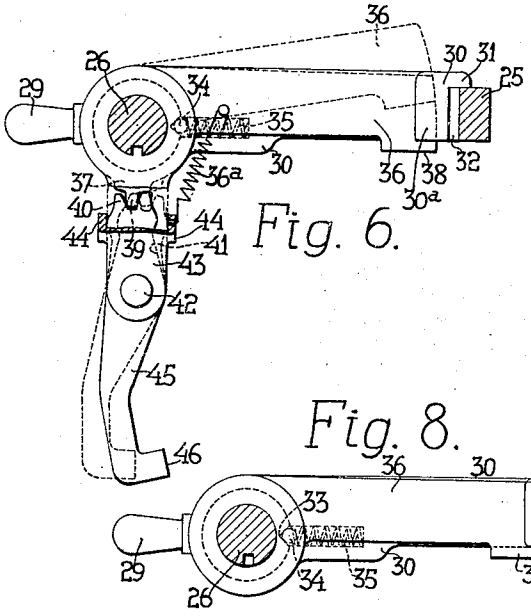


Fig. 6.

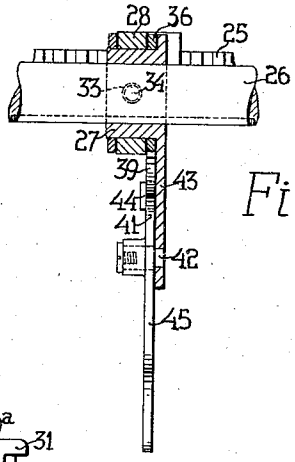


Fig. 7.

Fig. 8.

Fig. 9.

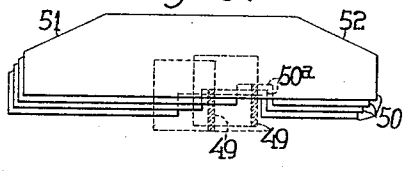


Fig. 10.

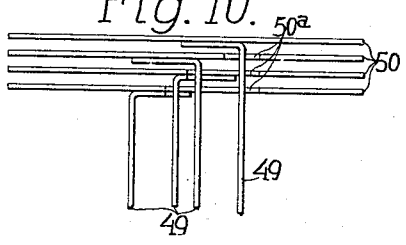
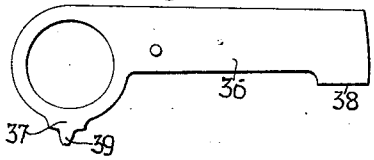


Fig. 11.



Witnesses.

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UNITED STATES PATENT OFFICE.

LYMAN DAVID BROUGHTON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,067,402. Specification of Letters Patent. Patented July 15, 1913.

Application filed October 4, 1910. Serial No. 585,186.

To all whom it may concern:

Be it known that I, LYMAN D. BROUGHTON, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The present invention relates to those typewriting machines which are especially adapted for tabulating work, and which to this end ordinarily comprise: first, a series of column stops adjustably attachable to the carriage, to accord in number and adjusted position to the columns or printing fields of the tabulation: secondly, a set of decimal tabulator stops, any selected one of which is adapted to be set to coöperate with the proper column stop in arresting the carriage at the desired decimal position of a column to which the carriage is thrown: and thirdly, key-operated means for releasing the carriage and setting the column stops so that any desired number of columns or printing fields may be skipped or passed over before the carriage is arrested at the selected column.

This invention is in the nature of an improvement upon the devices disclosed in my pending application No. 552,540 filed March 31, 1910.

The invention has particular reference to those machines in which the normal setting of the column stops is such as to render the same effective to stop the carriage, but in which, by means of suitable key operated connections, one or more of the column stops are movable to ineffective position to permit the carriage to skip or pass over the columns controlled by the stops so moved.

One feature of the present invention is the provision of a connection between each of the column stop keys, and the decimal point stop of the decimal tabulator, whereby, whenever a column stop key is operated to release the carriage and set the column stop, the decimal point tabulator stop is also set to coöperate with the selected column stop to arrest the carriage, unless at the time the carriage is released, some other one of the decimal tabulator stops is especially set by operation of a tabulator key. It follows that where in the present invention, the carriage is to be arrested at the decimal point position in the selected column, no decimal tabulator key need be operated. The operation of a single key, (the desired column stop key), not only releases the carriage, and, by actuation of the column stops, selects the column to which the carriage is to be skipped; but also sets the decimal point tabulator stop to coöperate with the selected column stop to arrest the carriage.

Another object of the invention is to provide a novel form of column stop and stop carrier, and means for setting the latter on the carriage, whereby the attachment of the stops to the carriage may be secure and of ample strength to resist the shocks imposed upon the column stops in arresting the carriage after a run, and whereby bending or other injury to the column stops by reason of the impact of the same against the tabulator stops is absolutely prevented.

A rack attached to, and extending longitudinally of the carriage, is a well known means whereby adjustably to secure the column stops to the carriage. The rack has commonly had two faces and the stops have straddled the rack to engage between the teeth thereof on either side. The stops have been slidable into and out of engagement with the rack. According to certain features of the present invention, this structure is much simplified. The rack has but a single face, thus permitting of a swinging movement of the stops in engaging and disengaging the rack; and the stops are so shaped that the shock of stopping the carriage is distributed to several of the teeth of the rack.

Certain features of the invention relate to a novel means for operating one or more column stops from a single stop key to render ineffective all of the stops so operated, and for returning the parts to normal position, together with the decimal point tabulator stop.

Other objects and features of the invention will more fully appear upon reference to the accompanying drawings in which,

Figure 1 is a view showing the assembled mechanism in side elevation, the typewriter frame and certain other parts being shown in cross section and in part broken away. Fig. 2 is a top plan view of so much of

the typewriter as relates to the invention, certain parts being shown in cross section or broken away. Fig. 3 is a perspective view of the assembled tabulating mechanism looking from the rear. Fig. 4 is a view in front elevation of the key board levers for operating the column stops. Fig. 5 is a view in rear elevation of the column stops and cooperating parts. Fig. 6 is a view in side elevation of one of the column stops and cooperating parts. Fig. 7 is a view in rear elevation partly cross sectional, of one of the column stops and coöperating parts. Fig. 8 is a view in side elevation of the stop for the last column, which is not controlled from the key board. Fig. 9 is a top view of the bank of key-operated column stop-actuating plates, with attached levers. Fig. 10 is a view in rear elevation of the plates and levers shown in Fig. 9. Fig. 11 is a view in side elevation of one of the column stop arms, shown in Fig. 6.

On the main frame 1 of the machine is mounted the carriage frame 2 which carries the platen 3 and various other parts. The carriage frame is driven in the usual manner by a drum spring, (not shown); and a pinion 4, forming part of an escapement mechanism, normally engages a rack 5 on the carriage frame to control the step-by-step or letter feed of the carriage. The rack 5 is supported on arms 6 pivoted at 7 to either end of the carriage, so that, upward movement of the arms 6, lifts the rack from the escapement pinion 4 to release the carriage from the escapement mechanism when it is desired to jump the carriage from one column or printing field to another, or to release the carriage at other times.

Mounted to have up and down movement in the main frame of the machine are a series of decimal stop plungers 8. These plungers are normally in depressed position, and after each operation are returned to normal position by means of springs 9, each secured at one end to one of the plungers 8, and at the other end to a cross bar 10 in the frame of the machine. A stop bar 24 limits the movement of the plungers, and determines the normal position of the same. The plungers 8 rest upon and articulate with levers 11 carrying the decimal stop or tabulating keys 11^a. Upon depression of any of the keys 11^a, the corresponding plunger 8 is elevated, and coöperates with one of a number of column stops to intercept and arrest the carriage in the proper position after each jump. The plungers 8 each have a shoulder 8^a; and a universal bar 12 fast to a rock shaft 13, extends crosswise over the shoulders 8^a so that when any one of the plungers 8 is elevated, the bar 12 causes the shaft 13 to be turned. Fast to the shaft 13 is also a lever 14. The lever 14 is connected to a link 15, and the link 15 to a lever 16 on a rock shaft 17. The shaft 17 carries an arm 18 bearing at its outer end against an arm or lever 19 journaled on a shaft 20. On the lever 19 is mounted a roll 21 adapted when the lever is rocked counter-clockwise, as shown in Fig. 1, to engage the rack 5 and lift the same out of contact with the escapement pinion 4. When, therefore, any plunger 8 is operated by its corresponding decimal key 11^a, the bar 12 is lifted up, causing the lever 14, link 15, lever 16, and arm 18 to be depressed, and the lever 19 to be rocked to release the carriage from the escapement mechanism. Fast to the rock shaft 17 is a brake or governor mechanism comprising a pinion 22, which, when the shaft 17 is rocked to release the carriage from the escapement mechanism, engages a second rack 23 on the carriage. The movement of the carriage during the column to column movement is therefore checked by the connection of the governor through the pinion 22 with the rack 23. The return of the plungers 8 to their normal position permits of the return to normal position of the parts above described. The return movement of these parts is effected by means of a spring not shown, preferably mounted upon the rock shaft 13. The machine as thus far described is not new with the present invention.

Fast to the carriage is a third rack 25 cut only on the side which faces to the rear of the machine. Also fast to the carriage to the rear of the rack 25 is a bar 26. The column or field stops are mounted on the bar 26, and are adjustable along this bar, (see Figs. 2 and 7). These stops each comprise a sleeve 27 splined to the shaft to be adjustable longitudinally thereof; and, mounted to be rocked on each sleeve, is a collar 28. Each collar at one point carries a finger piece 29 and at another point an arm or locking bar 30. The bar 30 is of sufficient length to engage the rack 25; and, when the stop is set, rests by means of a shoulder 31 (see Figs. 1 and 6) on the upper face of the rack. Each of the bars 30 carries at its end two or more teeth 32 which, when the bar is set, engage the teeth of the rack 25. Since there are a plurality of the teeth 32, the shock of the carriage is distributed to several teeth on the rack 25, instead of to one only. To move the bar 30 into and out of engagement with the rack, the finger piece 29 is swung on sleeve 27. The sleeves 27 have each a ball socket 33. Each of the bars 30 (see Fig. 2) has a pocket in which there is a ball 34 and a coiled spring 35 bearing against the same. When the pocket in the bar registers with the socket in the sleeve 27, the ball 34 enters the socket under the action of the spring and holds the bar 30 against angular displacement on the sleeve. The ball 34 is in its

socket 33 when the bar 30 is in engagement with the rack 25, and the set position of the bars 30 is thus maintained.

Mounted to rock on each of the sleeves 27 is a bell crank lever comprising a long stop arm 36, which extends toward the rack 25, and a short arm 37 which depends below the shaft 26. These bell crank levers are adapted to be rocked upon the sleeves 27 between a normal (full line Fig. 6) position and a position shown in dotted lines in the same figure. Springs 36ª, each attached at one end to stop arm 36 and at the other end to bracket 43 forming part of sleeve 27, return stop arms 36, and arms 37, to normal position after operation of the same. If any column stop arm 36 lies in its normal position, and in such position is brought by the carriage to the decimal plungers 8, a depending tooth 38 on the stop arm 36 will engage with whichever of the decimal plunger stops 8 may be elevated at that time, to arrest the carriage. The stop arm is held against lateral yield or displacement by the bar 30 to one side, and by a lug 30ª on the bar to the other side.

For the purpose of operating the stop arms 36 to render the same ineffective during the operation of the machine by drawing the same out of reach of the decimal stop, so that certain columns may be skipped when desired, the depending arms 37 of the stop arm levers are each engaged and adapted to be actuated by arm 41 of a lever 45 pivoted on a stud 42 carried by the depending bracket 43 on the sleeve 27. Each arm 37 has a tooth 39 which intermeshes with teeth 40 on the arm 41 so that when the lever 45 is rocked, the arm 37 must also be rocked. It will be noted that the stop arm 36 must move in a direction reverse to that of the arm 45. The movement of the arm 37, and consequently of the stop arm 36, is limited in either direction by ears 44 formed on the bracket member 43. The depending arms of the levers 45 each terminate in a tooth or hooked end 46. For purposes presently to appear, the lever arms 45 are of different lengths (as shown in Fig. 5), the arm representing the first column or printing field being of the greatest length, and the arms representing the succeeding columns being successively of shorter length. Since the final column is never skipped, the stop representing the same need not be operated from the key board, and there is consequently no lever connection to this stop (see Fig. 8).

The stop arms 36 are operated by means of the arms 45 from the key board as follows: Pivoted on a shaft 47 fixed in bracket arms 48 on the frame 1 of the machine are levers 49 corresponding in number to the number of columns or printing fields for which the typewriter is adapted to be set. The upper arm of each lever 49 carries at its end a plate 50 which lies in substantially a horizontal plane with one edge turned toward the actuating levers 45 (see Figs. 3 and 5).

Each of the plates 50, (see Figs. 9 and 10), except the upper plate, is cut away, as at 50ª, so that the longer levers in bringing their plates to the levers 45 may not be obstructed by the plates of shorter levers. The depth of the cut away portions is such, however, that a longer lever 49 in moving toward the actuating levers 45 presently engages and carries with it all the plates 50 below its own plate; and, each of the plates thus moved together then lies in position to operate its appropriate lever 45 when that lever is brought by the carriage to the plate. When, therefore, a lever 49 representing a column or printing field beyond the first column is operated to set its plate 50 in position to be engaged by its column stop lever 45 when the latter is brought by the carriage to the plate, all those plates 50 which control the column stops for the preceding printing fields are simultaneously set, so that, as the carriage advances, one after another of these preceding column stops is rendered ineffective and cannot be engaged by a decimal stop to arrest the carriage. For example, if the lever 49, which controls the third column stop is operated, that lever will set the plates 50 which operate the stops for the first and second columns, and therefore the first and second column stops, in turn, will also be rendered ineffective, so that the carriage will skip to the fourth column. The levers 49 are guided in their movements, and are held against lateral displacement, in slots 54 in a cross piece 53 on the frame 1.

Each lever 49 is operated from one of a number of column stop keys 55 on the key board by means of a link or pull rod 56 connected at one end to the lower arm of lever 49 and at the other end to a bell crank lever 57 pivoted on a shaft 58 in the front of the machine frame. Each bell crank lever 57 is connected to a lever 59 pivoted at 60 or 61 to the front of the machine frame. The levers 59 carry the column stop keys 55. These keys are numbered 2, 3, 4 and 5, and when operated, skip the carriage to the second, third, fourth and fifth columns respectively. The key #2 controls the first column stop; the key #3 the second column stop; etc. Key #2 by operating and rendering ineffective the first column stop, skips the carriage to the second column; key #3 to the third column; etc. There is no column stop key numbered "1", because when the first column or printing field is desired, there is no skipping to be done, and no stop to be rendered ineffective.

The pull rods 56 are slotted at 71 where they engage pins 72 on the levers 49, so that

the levers 49 may rock independently of the pull rods. When a column stop key is depressed to operate any except the lowest of the plates 50, it will be remembered that the plate or plates below the one so operated are also moved. If these plates are to be moved together in this manner, although but a single column key and pull rod is operated, then the levers 49 which support the plates connected to the other pull rods must be free to move independently of such pull rods; hence the slots 71. Coil compression springs 62 return the pull rods 56 rearward to normal position after each operation. When the levers 49 are in normal position, the pins 72 rest at the rear ends of the slots 71. Levers 57 and 59 with keys 55 are returned to normal position by pull rods 56 to which they are connected.

It has been shown that the plate 50 carried by the lever 49 which controls the column #1 stop is operated whenever any of the levers 49 is operated, because all the levers of the higher plates must engage the lowest plate in advancing toward levers 45. The lever 49 controlling the column #1 stop in returning to normal position, may therefore be utilized to return all the levers 49 of the other plates to normal position. To this end there is pivoted at 63 to a bracket 64 on the frame, a bell crank lever having arms 66 and 69. The arm 66 of this lever engages a pin 67 on the column #1 lever 49. The arm 66 is engaged by a spring 68, also attached to the bracket 64, and acting through arm 66 to return attached lever 49 to normal position after each operation. The plate 50 carried by this column #1 lever 49, in returning to normal position, engages and forces back with it the longer levers 49 of any of the higher plates 50 which may previously have been set. Each lever 45, as soon as disengaged from its plate 50, is free to return to normal position, and does so by virtue of spring 36^a, acting through its stop arm 36. The other arm 69 of the bell crank lever, pivoted at 63, projects toward the decimal plungers 8, and is bent to pass under a shoulder 70 on that one of the plungers 8 which is employed to arrest the carriage at the decimal point. This is the first plunger 8 to the left looking from the front of the machine. Whenever the lever arm 69 is raised by operation of the first column lever 49, acting through the arm 66, the decimal point plunger 8 is lifted by the engagement of the arm 69 with the shoulder 70, so that this plunger is set for the column stops. Since the lever arm 69, by virtue of its connection to the #1 column stop lever 49, is actuated every time any of the column stop keys 55 is operated, it follows that whenever any of these keys is operated the decimal point plunger 8 is also operated. To operate the decimal point stop at each column it is therefore unnecessary to operate a key of the decimal tabulator. When, in the tabulating work, some other decimal stop is the one desired, such stop is operated from its particular tabulator key as heretofore described; and, although the decimal point stop is also necessarily operated whenever any of the column stop keys is operated, it is in such instances inactive, because, before the carriage reaches the decimal point stop, it is arrested by whichever of the other decimal stops may have been lifted to set position.

In addition to the cams 52 at the right hand ends of the plates 50, it is also desirable to have cams 51 at the left hand ends of these plates; because there is a liability of the operator running the carriage back to begin a new line while a column key is depressed. In such instances, except for the cam 51, the column stop lever 45 which was in set position would strike its plate 50 squarely, and might be bent or injured by the blow. A lever 45 striking a cam 51 is swung idly back.

Assuming that the carriage has just been returned to initial position, and that it is desired to jump it to the fourth column or printing field, and there to arrest it at the decimal point position of the column: the column key 55, numbered "4", is depressed. This key controls the third column stop. When the key is depressed, the levers 59 and 57 are rocked to pull forward the proper rod 56, compressing its spring 62. The pins 72 normally rest at the rear ends of the slots 71 in the rods 56; so that, as the rod 56 goes forward, the lower arm of the corresponding (third column) lever 49, operated by key numbered "4", also swings forward; and the upper arm of this lever 49, rearward, with its plate 50, to set position. The upper arm of the third column lever 49 in swinging rearward engages and carries with it to set position, the plates 50 of the second and first column levers 49, so that as shown in Fig. 3, all the plates except the upper plate, which is operated from key numbered "5", are in set position. The levers 49, carrying the first and second column stop plates 50, are free to be thus moved to set position without corresponding movement of their pull rods 56, by reason of the slots 71.

As the first column plate 50 moves to set position, its lever 49 is rocked, and rocks the bell crank lever 66—69 around its pivot 63 against the action of the spring 68. The arm 69 of this lever thus swings up, and, by engagement with the lug 70 on the decimal point plunger 8, lifts that plunger, against the action of its spring 9, to set position. The decimal point plunger 8 in moving up engages and rocks the bar 12 on the

shaft 13, and through the connections 14, 15, 16, 17 and 18, rocks lever 19 to lift the rack 5 from the escapement pinion 4, thus releasing the carriage. The movement of the rock shaft 17 brings the governor into connection with the rack 23 through the pinion 22 just before the rack 5 is lifted free of the escapement pinion 4. The carriage then moves rapidly to the left under the control of the governor. As the carriage advances, it carries with it the column stops, all of which have previously been set by means of the rack 25 to any desired position. The first column stop is the first to reach the bank of plates 50. It finds its plate 50 in set position intercepting the path of its tooth 46 on the lever. The tooth 46 engages the cam 52 of its respective plate, and in being forced back by the cam, rocks the lever 45 to lift the first column stop arm 36 to ineffective position. The cams 52 are positioned so that this action occurs before the column stop arrives at the decimal stops. The plate 50 is of sufficient length to hold the first column stop arm 36 elevated until it has passed the last decimal stop, to wit, the decimal point stop. The decimal point stop is in its elevated set position, but the first column stop arm 36 has been lifted too high to engage it, and so the carriage moves on without stopping, and the first column or printing field is skipped. The second and third column plates 50 are also in set position, and so the second and third column stop levers 45, in turn, engage each its respective plate 50, to lift each its respective stop arm 36. The stop arms 36 of the second and third columns, like that of the first column, therefore pass the decimal point stop, and the carriage continues, without stopping, toward the fourth column. The fourth column stop lever 45 on arriving at the bank of plates 50 cannot engage its plate 50; because this plate lies above the upper end of the third column lever 49, (operated from the stop key numbered "4"), and so has not been moved rearward to set position by the key numbered "4". The fourth column lever 45 is therefore not rocked backward, as were the preceding levers 45. The fourth column stop arm 36 consequently remains in normal, depressed, position. This stop arm therefore presently engages the decimal point plunger 8, and the carriage is arrested at the decimal point of the fourth column. The column stop key, numbered "4", is then released. Springs 62, on rod 56 connected to this key, returns levers 57 and 59, and the key to normal position, determined by suitable stopping surfaces, on the frame, which are engaged by the levers 59. Spring 68 acting through lever 66, is then free to return not only the first column lever 49 and plate 50 to normal position, but, acting through these elements, to return second and third column levers 49 with their plates 50, also to normal position; all the levers 49 coming to rest with pins 72 at the ends of slots 71. When the spring 68 swings lever 66—69 to normal position, the spring 9 attached to the decimal point plunger 8 lowers that plunger until stopped by the bar 24; and, simultaneously with the return of the plunger 8, the carriage is disenaged from the governor and engaged with the escapement mechanism in the usual manner through the connections described, whereupon the machine is ready for letter feed. Assuming that some decimal stop, other than the decimal point stop, is desired, the proper tabulator key 11^a should be operated, in advance of the operation of the desired column stop. The carriage is then arrested before it reaches the decimal point stop; and the latter although set, is not reached by the column stop.

Obviously the structure shown and described is susceptible to various modifications within the scope of the invention.

Having thus described my invention, I claim:

1. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and pivotally mounted on the carriage frame to be movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be re-adjusted, a column stop carried by each of said adjustable devices, means coöperating with said stops to arrest the carriage, said column stops being movable on their supports into and out of operative position, each column stop being normally in operative position, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

2. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and pivotally mounted on the carriage frame to be movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be

re-adjusted, a column stop carried by each of said adjustable devices, means coöperating with said stops to arrest the carriage, said column stops being movable pivotally on their supports into and out of operative position, each column stop being normally in operative position, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

3. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and pivotally mounted on the carriage frame to be movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be re-adjusted, a column stop carried by each of said adjustable devices, means coöperating with said stops to arrest the carriage, said column stops being movable on their supports into and out of operative position, each column stop being normally in operative position, key operated members governing said column stops, and means controlled by said members to render predetermined stops inoperative when a selected key is operated.

4. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and pivotally mounted on the carriage frame to be movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be re-adjusted, a column stop carried by each of said adjustable devices, a set of key-operated decimal stops, said column stops being movable on their supports into and out of operative position, each column stop being normally in operative position and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

5. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and mounted on the carriage frame to be movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be re-adjusted, means for holding said stop-carrying devices in engagement with the rack, a column stop carried by each of said adjustable devices, means coöperating with said stops to arrest the carriage, said column stops being movable on their supports into and out of operative position, each column stop being normally in operative position, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

6. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack, the face of which is perpendicularly disposed, on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and mounted on the carriage frame to be movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be re-adjusted, a column stop carried by each of said adjustable devices, means coöperating with said stops to arrest the carriage, said column stops being movable on their supports into and out of operative position, each column stop being normally in operative position, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

7. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack, the face of which is perpendicularly disposed, on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be re-adjusted, a column stop carried by each of said adjustable devices, means coöperating with said stops to arrest the carriage, said column stops being movable down and up into and out of operative position, each column stop being normally in operative position, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

8. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a rack on the carriage frame, column stop-carrying devices, one for each printing field, adjustable longitudinally of the carriage frame and movable into engagement with said rack to be held by the latter against longitudinal displacement, and out of engagement with the rack to be re-adjusted, a column stop carried by each of said adjustable devices, means coöperating with said stops to arrest the carriage, said column stops being movable down and up into and out of operative position, each column stop being normally in operative position, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

9. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a plurality of column stops adjustable longitudinally of the carriage frame, means for holding said stops in adjusted position, said stops being also pivotally movable into and out of normal operative position, means coöperating with said stops in the operative position of the latter to arrest the carriage, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

10. In a typewriting machine, a power driven carriage having an escapement mechanism to control the feed of the carriage, means for releasing the carriage from the escapement mechanism to jump the carriage from one column or printing field to another, a plurality of column stops adjustable longitudinally of the carriage frame, means for holding said stops in adjusted position, said stops being also movable into and out of normal operative position, means coöperating with said stops in the operative position of the latter to arrest the carriage, and keys governing said column stops to render a predetermined number inoperative when a selected key is operated.

11. In a typewriting machine, the carriage, column stops, a set of decimal stops adapted to be set to engage the column stops to arrest the carriage after a run, column stop keys for controlling the column stops, and means operated from the column stop keys for setting one of the decimal stops.

12. In a typewriting machine, the carriage, column stops, a set of decimal stops adapted to be set to engage the column stops to arrest the carriage after a run, column stop keys for controlling the column stops, and means operated from a column stop key for setting one of the decimal stops.

13. In a typewriting machine, the carriage, column stops, a set of decimal stops adapted to be set to engage the column stops to arrest the carriage after a run, column stop keys for controlling the column stops, and means operated from the column stop keys for setting the decimal point stop.

14. In a typewriting machine, the carriage, column stops, a set of decimal stops adapted to be set to engage the column stops to arrest the carriage after a run, column stop keys for controlling the column stops, and means operated from each of the column stop keys for setting one of the decimal stops.

15. In a typewriting machine, the carriage, column stops normally in effective position, a set of decimal stops each adapted to be set to engage the column stops to arrest the carriage after a run, keys for positioning certain of the column stops in ineffective position whereby the same may avoid the decimal stops to cause the carriage to skip the column or columns controlled by the stop thus rendered ineffective, and means operated from the column stop keys for setting one of the decimal stops.

16. In a typewriting machine, in combination, a carriage, a column stop adjustable along the carriage, a decimal stop normally in ineffective position, a key, and means to enable said key by a single movement thereof to move the column stop and also set the decimal stop to effective position.

17. In a typewriting machine, a set of column stops, keys for controlling the same, and a decimal stop set from each of the column stop keys.

18. In a typewriting machine, a set of column stops, keys for controlling said stops, means whereby a more distant of said stops from the printing point, when set, positions all the stops between it and the printing point to render the same ineffective to arrest the carriage, and means controlled from the controlling means of the preceding column stop for returning the succeeding column stops to normal position.

19. In a typewriting machine, a set of column stops, connections for controlling said stops to render one or more of the same ineffective to arrest the carriage, and means whereby the controlling connection of one of said stops, in returning to normal position, effects the return to normal position of the controlling connections of the other of said stops.

20. In a typewriting machine, a set of column stops, connections for controlling said stops to render one or more of the same ineffective to arrest the carriage, a

spring attached to the controlling connection of one of said stops, and means whereby said spring returns all of said connections to normal position.

21. In a typewriting machine, a set of column stops, keys for controlling said stops, connections from each of said keys to its respective stop, and means whereby said stops may be controlled without movement of the keys.

22. In a typewriting machine, a set of column stops, keys for controlling said stops, connections from each of said keys to its respective stop, and means whereby certain of said stops may be controlled from the keys of one of the other stops without movement of its own key.

23. In a typewriting machine, a set of column stops, levers for controlling the same, and key-operated connections to said levers, said connections being loose to permit of operation of said levers without movement of said connections.

24. In a typewriting machine, a set of column stops, levers for controlling the same, key-operated connections for actuating said levers, said connections having a pin and slot attachment to the levers to permit of movement of the levers independently of the connections, and means carried by one lever for actuating the other levers so that a plurality of the levers may be returned to normal position when the one lever is so returned.

25. In a typewriting machine, a set of column stops, levers for controlling the same, key-operated connections for actuating said levers, said connections having a pin and slot attachment to the levers to permit of movement of the levers independently of the connections, means carried by one lever for actuating the other levers so that a plurality of the levers may be returned to normal position when the one lever is so returned, a set of decimal stops, and means connected to one of said column stop levers for setting one of said decimal stops whenever a column stop is set.

26. In a typewriting machine, a set of column stops, levers for controlling said stops, a set of decimal stops, means whereby the first column stop lever is actuated whenever any other column stop lever is actuated, and a connection between the first column stop lever and one of the decimal stops whereby the latter is set whenever any column stop lever is actuated.

27. In a typewriting machine, a set of column stops, levers for controlling said stops, a set of decimal stops, means whereby the first column stop lever is actuated whenever any other column stop lever is actuated, and a connection between the first column stop lever and the decimal point stop whereby the latter is set whenever any column stop lever is actuated.

28. In a typewriting machine, a set of column stops, levers for controlling said stops, a set of decimal stops, means whereby the first column stop lever is actuated whenever any other column stop lever is actuated, a two-armed lever pivoted to the frame of the machine, one arm of which last named lever is connected to the first column stop lever, and the other arm of which is adapted to engage and set one of the decimal stops whenever any column stop lever is actuated.

29. In a typewriting machine, the carriage, a rack on the carriage, column stops pivotally mounted on the carriage to be swung into and out of engagement with the rack, and members connected to said stops to be moved to positions to render the stops inoperative.

30. In a typewriting machine, the carriage, a plurality of column stops secured to the carriage and movable thereon from an effective to an ineffective setting, a plurality of plates, each shiftable into and out of the path of one of the column stop mechanisms, said plates having a cam surface at each end for engagement with the stop mechanisms according to the direction of movement of the carriage.

31. A stop mechanism comprising a carriage, a rack, an adjustable pivoted member adapted to swing into engagement with the rack, a stop on said pivoted member, and an arm on said member to swing it to a position to render the stop inoperative.

32. A stop mechanism comprising a rack, an adjustable member pivotally supported at one end and having a plurality of teeth engaging the rack of the carriage at the other end, and a stop pivotally supported on the first member at one end and lying close to said first member, the other end of said stop guided in a slot in said first member to hold said stop against damage.

33. A stop control mechanism comprising a carriage, a removable plate horizontally mounted and normally ineffective and having its ends beveled to serve as a cam member, a pivoted stop device having an arm to be engaged by said cam member, and a key connected to said cam member.

34. The combination with a letter-feeding typewriter carriage, of column-selecting mechanism including a set of independently operable keys, a decimal-stop mechanism to coöperate with said column-selecting mechanism to arrest the carriage in any selected position in any desired column; said decimal-stop mechanism including a second set of independently operable keys, and means operable by any of said column-selecting keys for setting one of the decimal stops.

35. The combination with a letter-feeding typewriter carriage, of a column-selecting mechanism including a set of independently operable keys and column stops controllable by said keys, said column stops being independently adjustable to different column positions, and a counter-stop operable by any of said keys.

36. The combination with a letter-feeding typewriter carriage, of column-selecting mechanism including a set of independently operable keys, a counter-stop mechanism to coöperate with said column-selecting mechanism to arrest the carriage in any selected position in any desired column; said counter-stop mechanism including a second set of independently operable keys, and means to enable any of said column-selecting keys to set one of the counter-stops.

37. The combination with a letter-feeding typewriter carriage, of a set of column-stops normally in working positions, said stops independently adjustable to different column positions, a set of column-selecting keys connected to means for displacing one or more of said stops from working positions, and a counter-stop operable by any of said keys.

38. The combination with a letter-feeding typewriter carriage, of a set of column-stops normally in working positions, a set of column-selecting keys connected to means for displacing one or more of said stops from working positions, a decimal stop mechanism including keys operable independently of the column-selecting keys, and means for enabling any of said column-selecting keys to set one of the decimal-stops.

39. The combination with a letter-feeding typewriter carriage, of a series of column-stops normally in working positions, said stops independently adjustable to different column positions, a series of keys, means for enabling the keys to withdraw certain of the column-stops while one or more remain in working position, and a counter-stop settable by any of said keys.

40. The combination with a letter-feeding typewriter carriage, of a series of column-stops normally in working positions, a series of keys, means for enabling the keys to withdraw certain of the column-stops while one or more remain in working position, a series of counter-stops, counter-stop operating keys, and means for enabling any of said column-selecting keys to set one of the counter-stops.

41. The combination with a letter-feeding typewriter carriage, of a series of carriers adjustable along the carriage, a series of column-stops upon said carriers and provided with arms, key-controlled cams or operating devices movable into the paths of the arms to withdraw the column-stops from normal working positions during the travel of the carriage, and a counter-stop.

42. The combination with a letter-feeding typewriter carriage, of a series of carriers adjustable along the carriage, a series of column-stops upon said carriers and provided with arms, key-controlled cams or operating devices movable into the paths of the arms to withdraw the column-stops from normal working positions during the travel of the carriage, a counter-stop, said column-stops with their carriers being adjustable independently of one another longitudinally of the carriage, and means being provided for securing the carriers where adjusted.

43. The combination with a carriage, of a bar, a plurality of mounts mounted upon said bar and each independently adjustable therealong in the direction of the run of the carriage, stops pivoted to said mounts, a key, a cam movable by said key to a position to engage one of said stops to withdraw the same, and a counter-stop also movable by said key into effective position.

44. The combination with a carriage, of a bar, a series of mounts mounted upon said bar and each adjustable independently therealong in the direction of the run of the carriage, stops pivoted to said mounts, a series of keys, and a series of cams movable by said keys to positions to engage certain of said stops to withdraw the same, and a counter-stop.

45. The combination with a carriage, of a series of mounts independently adjustable in the direction of the run of the carriage, a series of stops movably supported on certain of said mounts, a series of keys, a series of cams movable by said keys each independently of the others to positions to engage certain of said stops to withdraw the same, the first cam to withdraw one of said stops, the second to withdraw two of said stops and so on throughout the series of cams, and a counter-stop also controlled by said keys.

46. The combination with a carriage, of a rack bar, a plurality of mounts mounted on said bar, and each adjustable therealong independently of the others in the direction of the run of the carriage, column-stops upon said mounts, certain of said stops pivoted and having projections of graduated lengths, a series of keys, cams connected to said keys and placed to coöperate with said projections in order, one cam movable into the path of only the longest projection to withdraw one of the stops, the next cam movable into the path of the two longest projections to withdraw two of the stops, and so on throughout the series, a counter-stop movable by any of said keys and forming one of a series of decimal stops, and key-operated means to set any of said decimal stops.

47. The combination with a carriage, of a rack bar, a plurality of mounts mounted on

said bar, and each adjustable therealong independently of the others in the direction of the run of the carriage, column-stops upon said mounts, certain of said stops pivoted and having projections of graduated lengths, a series of keys, cams connected to said keys and placed to coöperate with said projections in order, one cam movable into the path of only the longest projection to withdraw one of the stops, the next cam movable into the path of the two longest projections to withdraw two of the stops, and so on throughout the series, a counter-stop movable by any of said keys and forming one of a series of decimal stops, and key-operated means to set any of said decimal stops; each of said cams having a dwell portion to hold the column-stop withdrawn all the while it is in the decimal-stop field.

48. In a typewriting machine, the combination of a carriage, tabulator mechanism comprising a series of column-stops pivoted to turn into and out of operative position, a key-controlled member operative to turn the column-stops on their pivots; the column-stops and the said key-controlled member being carried one by the carriage and the other by the frame of the machine, so that the travel of the carriage will bring different successive column-stops and said key-controlled member into coöperative relation, and a key-controlled carriage-arresting stop that is movable into and out of coöperative relation with the column-stops when the latter are in operative positions.

49. In a typewriting machine, the combination of a carriage, tabulator mechanism comprising a series of column-stops carried by the carriage and pivotally mounted thereon for movement into and out of operative position, a key-controlled device mounted upon the frame of the machine beneath the column-stops and coöperative with said stops to move them, and a counter-stop.

50. The combination with a carriage, of a series of column-stop devices pivoted thereon and each movable on its pivot into and out of working position, a key at the keyboard of the machine, a device upon the machine frame and operated by said key, said column-stop devices having parts that are presented by said carriage during the travel thereof to said key-operated device, and the latter constructed to effect movements of the column-stops upon their pivots, and a counter-stop.

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