

L. D. BROUGHTON.
TYPE WRITING MACHINE.
APPLICATION FILED MAR. 31, 1910.

1,051,077.

Patented Jan. 21, 1913.

3 SHEETS—SHEET 1.

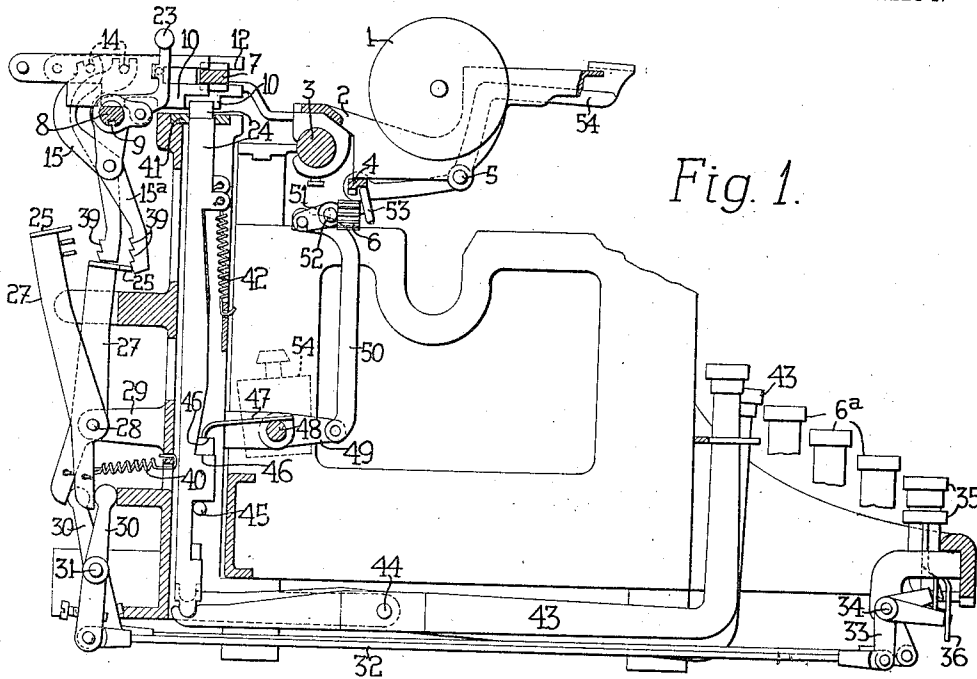


Fig. 1.

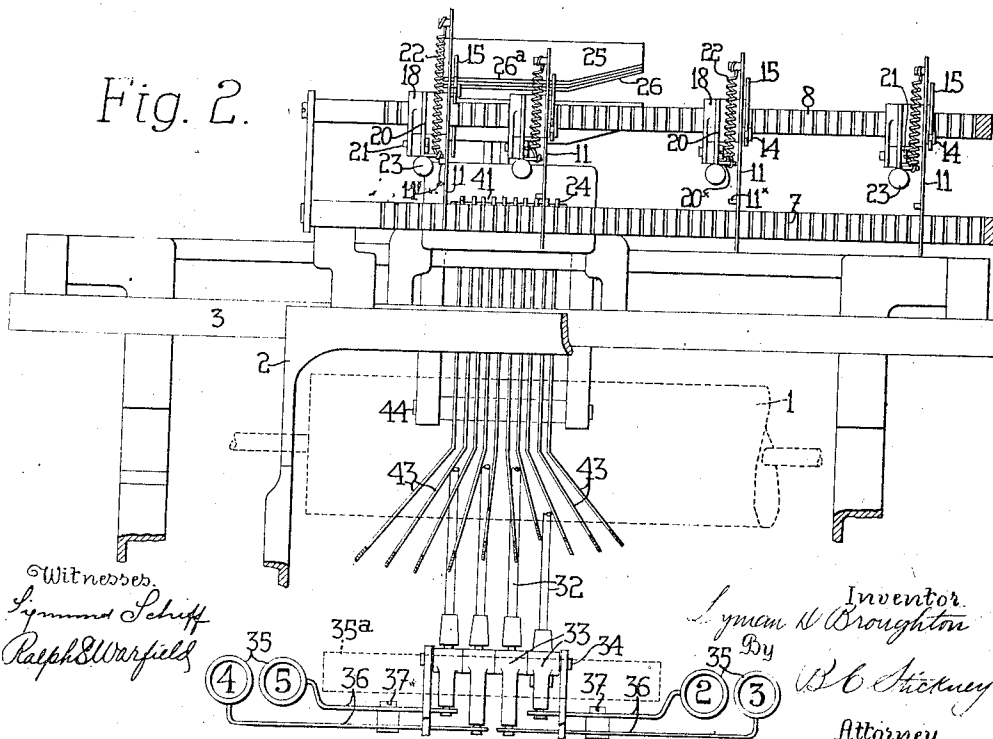


Fig. 2.

Witnesses.
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3 SHEETS-SHEET 2.

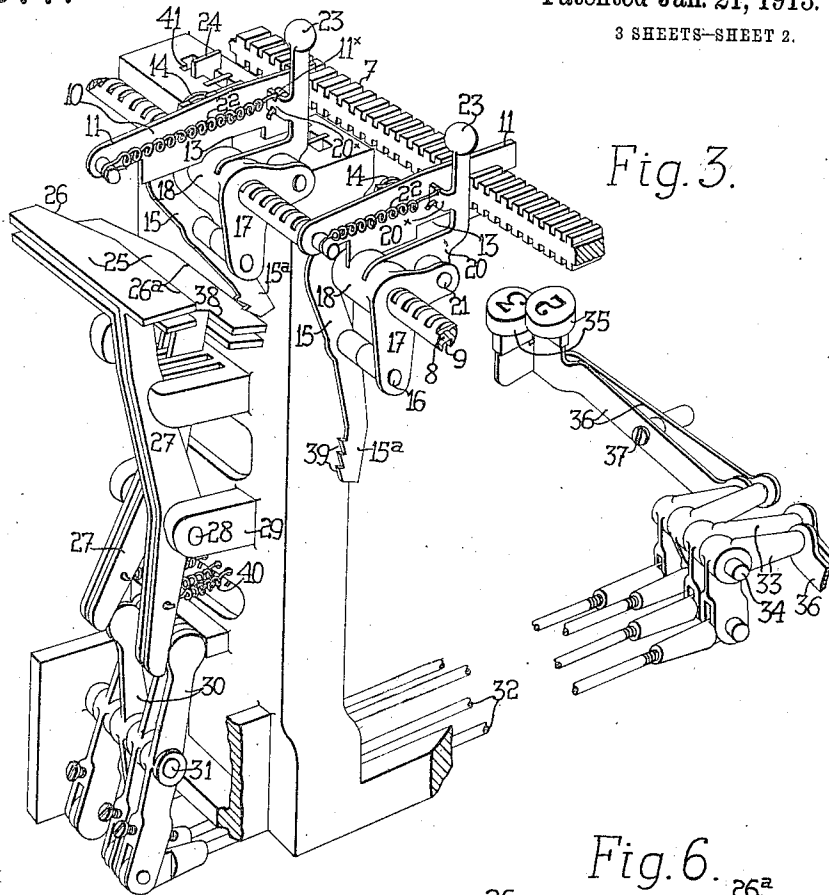


Fig. 3.

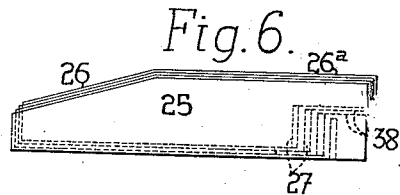


Fig. 6.

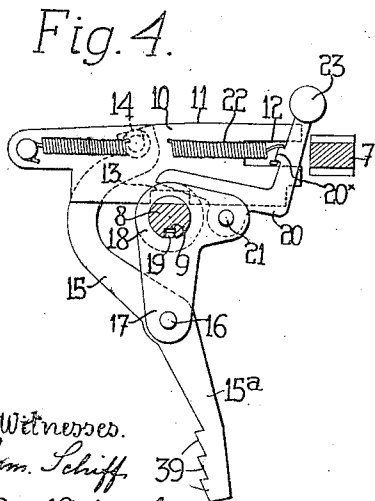


Fig. 4.

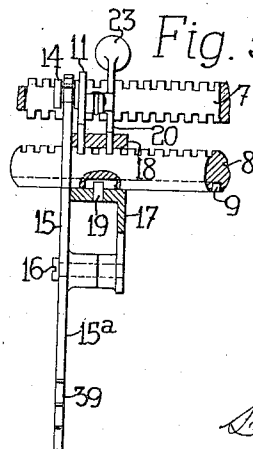


Fig. 5.

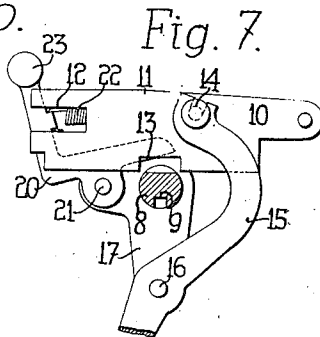


Fig. 7.

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3 SHEETS—SHEET 3.

Fig. 8.

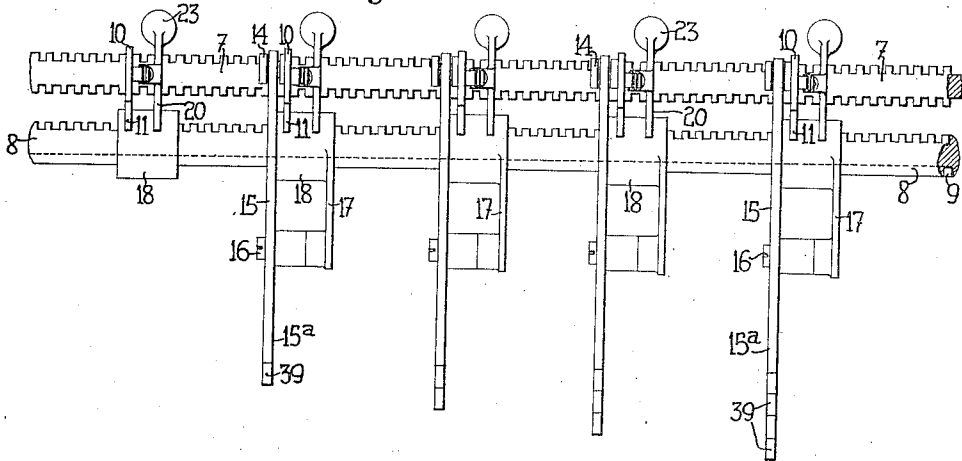
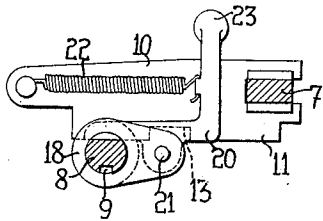


Fig. 9.



Witnessed.

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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 NEW JERSEY.

TYPE-WRITING MACHINE.

1,051,077.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Application filed March 31, 1910. Serial No. 552,540.

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 tabulating mechanism for typewriting and other machines, particularly to means for allowing the carriage to jump to any selected field or column, such devices being known in the art as "column skippers," and more especially consists of means for arresting the carriage at any desired decimal point in any selected column.

The principal feature of the invention is the provision of simple, efficient and durable means for effecting such tabulating movements of the carriage.

According to the present invention, the column-stops are individually movable into and out of position to be engaged by any selected individual decimal stops for arresting the carriage. Preferably the column-stops are normally in working positions, but key-operated means are provided for displacing any selected column-stop out of working position, so that, in the running of the carriage in letter-feeding direction, on its release from the control of the step-by-step letter-feed mechanism, such displaced column-stop will not contact with any decimal stop which may be projected, whereby the column or field represented by such displaced column-stop is skipped, and the carriage jumps to the next field, and is there arrested by the selected decimal stop and the desired column stop. The carriage may be caused to skip one or more columns or fields at will by operating the proper key.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a vertical sectional view from front to rear, showing the invention as applied to an Underwood front strike typewriting machine. Fig. 2 is a plan view of the same, with parts omitted and parts broken away. Fig. 3 is a perspective view from the rear of the machine, with parts omitted and broken away. Fig. 4 is a side elevation. Fig. 5 is a rear elevation of a movable stop

and parts connected therewith, parts being in section and omitted. Fig. 6 is a diagrammatic plan view of the stop-operating cam-bars. Fig. 7 is a view similar to Fig. 4 but taken from the opposite side, and partly broken away. Fig. 8 is a rear elevation showing the stop-operating levers. Fig. 9 is a detail side elevation of a column stop, from which the withdrawing arm is omitted.

The platen 1 is mounted, as usual, in a carriage 2 which moves along the rail 3, being controlled in such movement, from right to left, by the rack bar 4, hinged thereto at 5, and the co-acting pinion 6 on the framework of the machine, said rack and pinion forming part of the usual escapement mechanism. The typebars and their operating mechanism are not shown, except the keys 6^a, Fig. 1.

The carriage is provided with a column-stop rack bar 7, preferably with teeth on the upper and the lower sides thereof. The carriage 2 is also provided with a coöperating column-stop guide-bar 8 parallel to the rack 7, this bar 8 preferably having teeth on its upper side.

The column or field stops 10 form parts of metal plates 11 which are slotted at 12 to straddle the rack 7 between the teeth thereof. The under edge of said plates 11 are adapted to engage between the teeth of the rack 8. The stop or plate may be slid backwardly, Fig. 4, until it is free from rack 7, while recess 13 in the under edge of the stop enables it to clear rod 8, whereupon the stop may be adjusted to a new position along the rack, as will presently be explained. Each column-stop or plate 11 is provided with a headed stud 14 on one side, for engagement with the forked end of a lever 15, for moving the stop into and out of working position, said lever fulcrumed at 16 on an arm 17, mounted on a sleeve or hub 18 which is mounted to be capable of sliding along the rack 8 when it is desired to re-set the column stop. Said sleeve or hub is provided with a tooth or spline 19 to engage with guide-slot 9 in bar 8, whereby said sleeve 18 is prevented from turning on the round bar 8.

The sleeves 18 may be locked against accidental displacement along the rack or rod 8, by means of detent catches or dogs 20, fulcrumed at 21 to arms 17, to engage between

the teeth of the bar 8, or by the plates 11 (see Fig. 5) or both. For holding the detents or catches 20 in position, they may be connected with the returning springs 22 of their corresponding stops 10. Said springs are arranged to retain said stops normally in full engagement with the rack-bar 7 and so in their working positions, as shown at the right in Fig. 3. The catches 20 may also be provided with finger-pieces 23. As many column stops 10 and appurtenances are provided as may be desirable, there being one stop 10 for each field or column, and each stop, in its normal position (shown at the right in Fig. 3), moving with the carriage in a path such that when a decimal or other stop 24 is pushed up, as hereinafter set forth, the decimal stop will co-act with the column stop to arrest the carriage.

The pendent arms 15^a of levers 15, as shown, are of graduated lengths, the longest being at the left as one faces the front of the machine, and the shortest being at the right, the lengths increasing from right to left (Fig. 8). At the back of the machine, in position to be moved into the paths of the pendent arms 15^a of their corresponding levers 15, are horizontal cam-bars 25 placed one above another, there being one cam-bar for each lever 15. These cam-bars 25 have oblique faces 26 at their front sides or edges, and each bar 25 is attached to its individual operating-lever 27, these levers being fulcrumed at 28 in a bracket 29 on the frame of the machine.

To set the cam-bars, there are provided key-operated levers 30, fulcrumed at 31 in the framework below levers 27, and connected by links 32 with bell-levers 33, the latter fulcrumed at 34 on the front of the framework, and operated from keys 35 by means of cross-levers 36 which are fulcrumed at 37, at the front of the machine. Said keys 35 are preferably located two (or more) at each end of the usual space-key 35^a. The cam-bars 25 and their levers 27 are arranged so that the lowest bar 25 co-acts only with the longest pendent lever-arm 15^a; so that the next upper bar 25 may withdraw the first two column-stops 10, in succession; so that the third bar 25 from the bottom, will move successively the first three stops 10 to their inoperative positions as the carriage moves to the left from the right; while the top cam-bar will move four of the column stops in succession from their normal positions. It will be observed that the longest lever 15 is operated by the bar 25 lowest of those shown; that the shortest lever 15 is operated by the highest of the cam-bars 25 shown; and the intermediate levers 15 by the intermediate cam-bars. The longest lever 15 is at the left and the shortest is at the right of the carriage.

The means whereby the levers 27 move the

cam-bars in the manner just described, is illustrated in perspective in Fig. 1, the cam-bars 25 being suitably notched at 38 to clear or pass in front of their levers 27. However, the lower cams may move idly forward, where the levers of the upper cams are operated. The levers 15 are provided with facets 39 for co-action with the various cam-bars 25. The levers 27 and parts operated thereby may be returned to normal positions by springs 40. Ten decimal stops 24, more or less, are mounted to slide up and down in guides 41 on the framework, being drawn downwardly by returning springs 42. The stop rods 24 are operated by levers and keys 43, the levers being fulcrumed at 44. The rod 45 acts as a stop to the downward motion of the rods 24, and the shoulders 46 on said rods 24 act on a universal bar or arm 47 rigid with a rock-shaft 48 to lift the same arm and rock the shaft. The shaft 48 has an arm 49 rigid therewith, which arm is connected by a link 50 with an arm 51 on a shaft 52, which is journaled in the fixed frame of the machine. The shaft 52 carries a roller 53 which is arranged to raise and lower the rack-bar 4 out of and into engagement with the carriage-escapement pinion 6 as the shaft 52 is rocked. 54 marks the usual release key on the carriage 2 for rocking the bar 4. The numerals "2," "3," "4" and "5" on the keys 35 indicate the several columns or fields to which one may skip or jump when the carriage is at the extreme right hand limit of its motion by depressing one or another of these keys 35, and also one of the keys 43. Thus, if one depresses the key marked "2" and simultaneously one of the keys 43, the cam-bar 25 at the bottom of the series, (the other cams remaining stationary), is moved forward into position to engage with the longest lever 15 15^a and move the corresponding stop 10 backward to a position where, in the run of the carriage toward the left, it will miss the decimal stop 24 lifted by the depressed key 43, whereby the stop 10, representing the second column or field from the beginning of the line, will co-act with the stop-rod 24 so lifted, and arrest the carriage 2. The dwell portion 26^a of the cam-bar insures that the column-stop shall be withdrawn long enough to permit it to pass all the decimal stops. But if the operator omits to depress any of the keys 35 while depressing a key or keys 43, the column-stops 10 will all remain in normal positions, and the stop 24 lifted by the key 43, will co-act with the column-stop 10 which corresponds to the longest lever 15, and will arrest the carriage at the first field or column. Therefore, in using the machine simply as a decimal tabulator, it is unnecessary to operate any of the keys 35.

If one depresses the key marked "3" among the keys 35, the second cam-bar 25

from the bottom of the series is moved forward, (the lowest cam-bar of the series moving idly forward); the facets 39 on the longest and next longest lever 15 co-act with the second cam-bar 25 just mentioned, and the two corresponding stops 10 are successively moved backward out of the way for co-action with the stop 24 lifted by the depressed key 43, and the carriage skips or jumps forward to the third field or column, and is there arrested by the next stop 10 which remains in place, it not being affected by the keys 35 and 43 depressed as stated. If one depresses the key 35 which is marked "4", and then one of the keys 43, the lever 27 corresponding to the depressed key 35 moves forward its cam-bar 25 (being in the case illustrated, the bar next the top of the series) into position for co-action with the pendent lever-arm 15^a third in the decreasing order of length, and, through the facets 39, for co-action with the two levers 15 that are longer than this third lever 15; and as the carriage moves forward on being released by the operation of the key 43, said cam-bar may operate all said levers 15 to withdraw their stops 10 into positions where they will pass the upraised stop 24, and permit the unmoved column-stop 10, (which corresponds to the fourth field or column), to arrest the carriage. But if one depresses the key 35 which is marked "5", and then one of the keys 43, the topmost bar 25 is moved forward into position for co-action with the shortest lever 15, and, through facets 39, with the other longer levers 15, and as the carriage moves forward on the depression of the selected key 43, said uppermost cam-bar 25 operates, or may operate, all of the said levers 15 to move their corresponding stops 10 rearwardly out of positions for co-action with the rod 24 lifted by the key 43 depressed, so that they will pass by said uplifted rod 24, and the carriage will move to the left, under the influence of the usual spring drive (not shown), until the stop 10 corresponding to the fifth field or column strikes said uplifted rod 24 and arrests the carriage in the fifth field or column.

The speed of the carriage when released as above set forth may be governed in any usual manner, as by the governor indicated at 55. It is understood, of course, that on the depression of any key 43 as above set forth, the described arrangements or connections between the shoulders 46 and the rack-bar 4, cause the said rack-bar 4 to be disengaged from the pinion 6, so as to permit the driving-spring to move the carriage forward freely. It will also be understood that, for the sake of clearness, it has been assumed, in the foregoing description of the operation, that the carriage starts in each case from the extreme right hand position thereof; but it is obvious that it may

be started from any position thereof and be arrested in the same manner, even though one or more of the stops 10 may have already passed the positions of the rods 24, and may have passed the cam-bars 25 so as to be unaffected thereby, as the carriage runs forward. When it is desired to adjust a stop 10 along the bar 7, the corresponding detent 20 is lifted to disengage it from the rack-bar 8, while the stop 10 is moved back until a slot 13 in the under side thereof is over the rod 8, by which time the plate 11 is wholly disengaged from both the rod 8 and the rack 7, as shown in Fig. 4. With the parts in the positions shown in Fig. 4, the sleeve or carrier is slidden normally along the bar 8 to any desired position; whereupon the lever 20 and the stop 10 are released, the end of detent-lever 20 engages between the teeth of rack 8, and the plate 11 slips into its new position between teeth of the rack 7. The pin 11^x on the plate 11 co-acts with the lug 20^x, to limit the rearward motion of the stop 10 by the lever 15. It is obvious also, that the provision of the various facets 39 on the levers 15, renders unnecessary the moving of more than the one cam-bar 25 corresponding to the key 35 depressed; that is, an alternative arrangement is shown for operating the levers 15.

It will be understood from Fig. 8 that when all of the column stop withdrawing arms 15^a, are swung to withdraw the four column stops at the right in Fig. 8, the particular decimal stop 24 which is projected will engage the extreme left-hand column stop at Fig. 8, which is seen in side elevation at Fig. 9, and which has no withdrawing lever 15, 15^a. Whenever the first column stop 11 is withdrawn, the second column stop may arrest the carriage; whenever both the first and second are withdrawn, the third column stop may arrest the carriage; and so on throughout the series of five column stops; it being unnecessary to provide the last one with withdrawing means. Whenever any one of the keys 43 is depressed without first depressing a key 35, the first extreme column stop at the right of Fig. 8 arrests the carriage, and if desired, the operator may continue to operate the keys 43 (without depressing any key 35), so that each column stop 10, in succession, will serve to arrest the carriage. The number of column stops is not limited to five.

The typewriter carriage can usually be positioned in various ways. This usually can be done not only by using a tabulating key, but also by using the ordinary carriage release key, or the space-key usually arranged at the front of the keyboard, or even by touching the alphabet key; or the carriage can be returned or moved in one direction by simply pressing on the carriage itself.

The carriage can therefore be brought to the Fig. 3 position by the ordinary space-key, or by the ordinary carriage release key, or by manipulating the alphabet keys. Having arrived at this position, it is obvious that the column stop key shown at Fig. 3 would move the column stop, as shown in said figure, even if the carriage were stationary. While it is true that in some cases, the carriage can cooperate with the key through the cam 26, to move a column stop, still it is also true that in many cases when the carriage is stationary the key alone can operate through the edge 26^a, to move said column stop, as illustrated at Fig. 3. The columns of figures written on the page are oftentimes placed so closely together, that the column selecting keys 35 will operate the column stops while the carriage is stationary.

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

Having thus described my invention, I claim:

1. In a tabulating mechanism, the combination with a carriage, of a column-stop carried thereby and movable relatively thereto transversely to the letter-space feed thereof, a thrust rod movable into the path of said stop to arrest the carriage, and key-controlled means for displacing said stop out of its normal path, actuated through the movement of said carriage, to permit said stop to pass said thrust rod.

2. In a tabulating mechanism, the combination with the carriage rack, of a series of column stops thereon and movable transversely thereof, a thrust rod movable into the normal paths of said stops, and means for displacing certain of said stops automatically when said carriage advances to permit said thrust rod to pass.

3. In a tabulating mechanism, the combination with a carriage rack, of a series of column-stops thereon and individually movable transversely thereto, a lever for each stop for moving the same on said rack, said levers being of graduated lengths, and key-operated means for actuating said levers.

4. In a tabulating mechanism, the combination with a carriage rack, of a series of column-stops thereon and individually movable transversely thereto, a lever for each stop for moving the same on said rack, said levers being of graduated lengths, movable cam-bars for moving said levers, and means for moving said cam-bars.

5. In a tabulating mechanism, the combination with the carriage-rack, of a series of column-stops, a lever for each stop for moving the same, movable cam-bars for moving said levers, and means for moving said cam-bars.

6. In a tabulating mechanism, the combination with the carriage-rack, of a second

rack-bar on the carriage parallel thereto, a sleeve mounted on said second rack-bar and adjustable therealong, a lever fulcrumed on said sleeve, a column-stop for engagement with the first-named rack-bar and movable endwise by said lever, and means on the frame for operating said lever to withdraw said stop from its operative position.

7. In a tabulating mechanism, the combination with the carriage-rack, of a second rack-bar on the carriage parallel to said rack-bar, a sleeve mounted on and adjustable along said second bar, a lever fulcrumed on said sleeve, a column-stop for engagement with the first-named rack-bar and movable endwise by said lever to withdraw it from operative position, a returning spring for said stop, and means for operating said lever to withdraw said stop from its operative position.

8. In a tabulating mechanism, the combination with the carriage-rack, of a second rack on the carriage parallel to the said rack, a sleeve mounted on and adjustable along said rack, a lever fulcrumed on said sleeve, a column-stop for engagement with the first named rack and movable thereon by said lever into and out of working position, a detent-device for locking said sleeve in position on said second rack, a spring connecting said detent and said stop to return the stop to working position, and means for operating said lever at will.

9. In a tabulating mechanism, the combination with the carriage rack, of a column-stop thereon and movable relatively thereto into and out of working position, a lever fulcrumed on the carriage and moving said stop, and a key-operated cam for actuating said lever.

10. In a tabulating mechanism, the combination with the carriage-rack, of a column-stop on and movable relatively to said rack, a lever for moving said stop, a spring for returning the same, a cam, and key-actuated means for moving said cam into and out of position for operating said lever to draw said stop from working position.

11. In a tabulating mechanism, the combination with the carriage-rack, of a column-stop on and movable transversely of said rack, a lever for moving said stop, a spring for returning the same to its working position, a cam-lever for co-action with said stop-moving lever in withdrawing the stop from working position, a key, and connections between said key and said cam-lever.

12. In a tabulating mechanism, the combination with the carriage-rack, of a column-stop on and movable transverse to said rack, a lever for moving said stop, a return-spring therefor, and a series of independently-operable cams for co-action with said lever to move said stop from working position.

13. In a tabulating mechanism, the combination with the carriage-rack, of a second

nation with the carriage-rack, of a series of column-stops on and independently movable transverse to said rack, levers for moving said stops, and independently-operable cams for operating each its own lever.

14. In a tabulating mechanism, the combination with the carriage-rack, of a series of column-stops on and independently-movable transverse to said rack, levers for moving said stops, springs for returning them, and key-operated independently-movable cams for operating said levers.

15. In a tabulating mechanism, the combination with a carriage rack, of a series of column stops, a series of thrust rods, means for individually extending said thrust rods into the path of said column stops, means for normally holding said column stops in a position to strike any one of said thrust rods when extended, and means moving with said carriage rack for displacing certain of said column stops as said carriage rack advances.

16. A plurality of column stops moving with the carriage, in combination with a thrust rod adapted to be extended into the path of said column stops, and means operated from the keyboard for withdrawing certain of said column stops to permit the same to pass said thrust rod.

17. In a tabulating mechanism, the combination with a carriage rack, of stops on said rack, decimal stops operated from the keyboard cooperating with said first stops, and means operated from the keyboard for selectively disabling a predetermined number of said first stops.

18. In a tabulating mechanism, the combination with a carriage rack, of stops on said rack, keys at the keyboard of the machine to operate said stops, each of said stops serving as a column selector, and a decimal selecting device to cooperate with said stops, said decimal selecting device mounted on the frame of the machine.

19. In a tabulating mechanism, the combination with a carriage rack, of stops on said rack, means operated from the keyboard for disabling one of said stops, comprising means for disabling a stop normally operative in the travel of the carriage previous to said directly disabled stop.

20. In a tabulating mechanism, the combination with a carriage, of an array of stops on the carriage, an array of cooperating stops on the frame of the machine, and means controlled from the keyboard to operate one of said stops to serve as a column selector and to cooperate with another to serve as a decimal tabulator.

21. In a tabulating mechanism, the combination with a carriage, of column stops on said carriage, column-stop selecting mechanism, decimal stops on the frame of the machine, and two sets of keys, one set con-

nected to said column stop-selecting mechanism and the other to said decimal stops, the keys in the two sets being concomitantly operable.

22. In a tabulating mechanism, the combination with a carriage rack, of a series of stops thereon, keyboard operated means for selectively moving said stops, the stops returning as soon as the keys are released, and a stop on the main frame to cooperate with said first stops.

23. In a tabulating mechanism, the combination with a carriage and a rack, of stops on said rack controlled from the keyboard for column selectors, and decimal tabulator keys controlling a carriage release and stop device to cooperate with said first stops to bring the carriage to rest at a selected denomination.

24. In a tabulating mechanism, the combination with a carriage rack, of a series of column stops on said rack and movable thereon, faces on said stops cooperating with cams operated from the keyboard to move said stops into inoperative position, and keys for operating said cams.

25. In a tabulating mechanism, the combination with a carriage, of a series of column stops thereon, keyboard operated cams on the frame controlling said stops, a face on some of said stops to cooperate with selected cams to disable said stops, and some stops having faces that fail to meet certain cams.

26. In a tabulating mechanism, the combination with a carriage, of a series of column stops thereon, a key-operated cam on the frame cooperating with a member on one of said stops to control it and adapted to be inoperative with respect to another stop.

27. The combination with a letter-feeding typewriter carriage, of a set of column stops normally in working positions, and a set of column-selecting keys operatively connected to means for displacing one or more of said stops from working positions.

28. The combination with a letter-feeding typewriter carriage, of a set of column stops normally in working positions, and a set of column-selecting keys operatively connected to means for displacing one or more of said stops from working positions, the connections between the keys and the column stops including means for permitting the stops to be adjusted to different positions longitudinally of the carriage.

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

30. The combination with a letter-feeding carriage, of a series of stops thereon and normally in working positions, a series of keys mounted upon the framework of the machine and operable independently of one another, and operative connections from the keys to the stops to enable the keys to displace the stops when the carriage is in different positions. 70
31. The combination with a letter-feeding carriage, of a series of stops thereon and normally in working positions, a series of keys mounted upon the framework of the machine and operable independently of one another, and operative connections from the keys to the stops to enable the keys to displace the stops when the carriage is in different positions; one of said keys having connections to displace a single stop, another of said keys having means to displace the first two stops, and so on throughout the series of keys and stops. 75
32. The combination with a letter-feeding carriage, of a rack thereon, a series of column-stops independently adjustable along said rack and normally in working positions, a series of keys mounted upon the framework of the machine and operable independently of one another, and operative connections from the keys to the column-stops to enable the keys to displace the column-stops when the carriage is in different positions. 80
33. The combination with a letter-feeding carriage, of a rack thereon, a series of column-stops independently adjustable along said rack and normally in working positions, a series of keys mounted upon the framework of the machine and operable independently of one another, operative connections from the keys to the column-stops to enable the keys to displace the column-stops when the carriage is in different positions, one of said keys having connections to displace a single column-stop, another of said keys having means to displace the first two column-stops and so on throughout the series of keys and column-stops; the last column-stop being unconnected with any of said keys, and a counter-stop on the framework of the machine. 85
34. The combination of a letter-feeding carriage, a set of column stops for said carriage, a counter-stop, and mechanism, including a set of keys, for displacing the column-stops, to determine which of the column-stops shall be engaged by the counter-stop; said mechanism also including means for maintaining the desired column-stop displacement during the relative movements of the column-stops and counter-stop while the carriage is in motion. 90
35. The combination of a letter-feeding carriage, a set of column-stops mounted on said carriage, a set of decimal-stops mounted upon the machine frame and provided with operating means, and mechanism, including a set of keys also mounted upon the machine frame, for displacing the column-stops; said mechanism including means for maintaining the column-stop displacement as the column-stops are moving past the decimal stops. 95
36. The combination of a carriage, a key-operated counter-stop mounted upon the framework of the machine, a series of column-stop devices mounted upon the carriage and having arms of graduated lengths, a series of operating devices mounted one above or beyond another in position to engage said arms during the movement of the carriage and thereby displace one or more of the column-stops, and keys operatively connected to said operating devices. 100
37. The combination of a carriage, a key-operated counter-stop mounted upon the framework of the machine, a series of column-stop devices mounted upon the carriage and having arms of graduated lengths, a series of operating devices mounted one above or beyond another in position to engage said arms during the movement of the carriage and thereby displace one or more of the column-stops, and keys operatively connected to said operating devices; said column-stops with their arms adjustable along said carriage. 105
38. The combination of a carriage, a key-operated counter-stop mounted upon the framework of the machine, a series of column-stop devices mounted upon the carriage and having arms of graduated lengths, a series of operating devices mounted one above or beyond another in position to engage said arms during the movement of the carriage and thereby displace one or more of the column-stops, keys operatively connected to said operating devices; said column-stops with their arms adjustable along said carriage, and catches for securing the column-stops where adjusted upon the carriage. 110
39. The combination of a letter-feeding carriage, a set of column-stops mounted thereon, a set of levers mounted on said carriage to operate said column-stops and having arms of graduated lengths, devices placed one above another for operating said arms, and keys for actuating said operating devices. 115
40. The combination of a letter-feeding carriage, a set of column-stops mounted thereon, a set of levers mounted on said carriage to operate said column-stops and having arms of graduated lengths, devices placed one above another for operating said arms, keys for actuating said operating devices; each arm adjustable together with its column-stop along the carriage, and means being provided for securing the arm and column-stop where adjusted. 120
41. The combination of a carriage, a set of decimal-stops mounted upon the machine frame and provided with operating means, and mechanism, including a set of keys also mounted upon the machine frame, for displacing the column-stops; said mechanism including means for maintaining the column-stop displacement as the column-stops are moving past the decimal stops. 125
42. The combination of a carriage, a set of decimal-stops mounted upon the machine frame and provided with operating means, and mechanism, including a set of keys also mounted upon the machine frame, for displacing the column-stops; said mechanism including means for maintaining the column-stop displacement as the column-stops are moving past the decimal stops. 130

ries of column-stops, arms of graduated lengths connected to said column-stops, and a series of key-operated displacement bars normally out of the paths of said arms, but movable into said paths, one to displace the first column-stop, the next to displace the first two column-stops, and so on throughout the series.

42. The combination of a carriage, a series of column-stops, arms of graduated lengths connected to said column-stops, a series of key-operated displacement bars normally out of the paths of said arms, but movable into said paths, one to displace the first column-stop, the next to displace the first two column-stops, and so on throughout the series, and key-operated decimal-stops adjacent to said bars.

43. The combination of a carriage, a series of column-stops, arms of graduated lengths connected to said column-stops, a series of key-operated displacement bars normally out of the paths of said arms, but movable into said paths, one to displace the first column-stop, the next to displace the first two column-stops, and so on throughout the series, and key-operated decimal-stops adjacent to said bars: said bars having cam edges to engage and move said arms, and also having dwell edges to hold the arms displaced while the column-stops are passing the decimal-stops.

44. The combination of a carriage, a rack thereon, a series of column-stops, a series of carriers or supports for said column-stops, each column-stop being adjustable together with its carrier along said rack, arms of graduated lengths connected to said column-stops, and a series of key-operated displacement bars normally out of the paths of said arms, but movable into said paths, one to displace the first column-stop, the next to displace the first two column-stops and so on throughout the series.

45. The combination of a carriage, a rack thereon, a series of column-stops, a series of carriers or supports for said column-stops, each column-stop being adjustable together with its carrier along said rack, arms of graduated lengths connected to said column-stops, a series of key-operated displacement bars normally out of the paths of said arms, but movable into said paths, one to displace the first column-stop, the next to displace the first two column-stops and so on throughout the series, and catches or detents to secure said carriers and column-stops where adjusted along said rack.

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

47. The combination with a carriage, of a plurality of mounts, each adjustable independently of the others in the direction of the run of the carriage, stops upon said mounts, certain of said stops movably supported and having projections of graduated lengths, a series of key-operated cams placed to cooperate with said projections in order, one cam movable into the path of 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 of cams, and a counter-stop.

48. The combination with a power-driven carriage and a feeding mechanism therefor, of a plurality of mounts, each adjustable independently of the others in the direction of the run of the carriage, stops movably mounted upon said mounts, said stops having projections of graduated lengths, a series of key-operated cams to cooperate with said projections in order, one cam movable into the path of the longest projection to withdraw its stop, the next cam movable into the path of the two longest projections to withdraw their stops, and so on throughout the series, a series of decimal counter-stops, and means for projecting any of said counter-stops and releasing the carriage simultaneously with the movement of any of said cams.

49. The combination with a carriage, of a bar having rack teeth projecting therefrom, a mount supported wholly upon said bar and adjustable therealong, a column-stop mounted upon said mount, a counter-stop, and key-operated means to withdraw said column-stop.

50. The combination with a carriage, of a series of stops for determining the position of said carriage, a cam for withdrawing all stops preceding the desired stop to ineffective positions, and a key for actuating said cam.

51. The combination with a carriage, of a series of stops for determining the position of said carriage, a series of counter-stops, any one of which may cooperate with said first-mentioned stops, a cam for withdrawing all stops of one series preceding the desired stop to ineffective positions, and a key for actuating said cam, said cam having a dwell portion co-extensive with the effective range of said counter-stops.

52. The combination with a carriage, of a frame, a series of stops on said carriage, a series of stops on said frame, the stops in one series being normally in an ineffective position and the stops in the other series being normally in an effective position when in the range of action of the ineffective series, and means to enable the engagement of any stop in one series with any stop in the other series by withdrawing from effective

positions all the stops in the effective series preceding the selected stop in this series and projecting to an effective position the selected stop in the ineffective series.

53. The combination with two primary elements viz: a frame and a carriage, said frame and said carriage having a traveling movement relative to each other, of a series of primary stops mounted on one of said elements to determine the relative position of said elements for particular zones, each zone including a group of spaces, a series of counter-stops mounted on the other element for determining the relative position of said elements for particular spaces in a zone, a set of keys for each series of stops, and key-operated connections enabling the selection of any primary stop and any counter-stop to cooperate with each other to determine the relative position of said primary elements for a selected zone, and a selected space in the selected zone, each key of one set acting to withdraw from an effective position all stops of the associated series preceding the one corresponding to the position selected by the actuated key of the set.

54. The combination with a traveling carriage, of a series of stops for said carriage, said stops having projections of graduated length to determine the effectiveness of said stops, said stops being arranged to stop said carriage after periods of travel inversely proportional to the length of said projections.

55. The combination with a carriage, of a series of stops on said carriage having projections of graduated lengths, said stops being arranged on said carriage according to the magnitude of their projections with the maximum to the left and the minimum to the right, and means cooperating with said projections to determine the action of said stops.

56. The combination of a carriage, a series of column stops movable independently of one another into and out of working positions, a key or finger-piece, means dependent upon the position of the carriage for enabling said key, or finger-piece to control such independent movement of any of said column stops, and a counter-stop.

57. The combination of a carriage, a series of column stops thereon movable independently of one another into and out of working positions, a key mounted upon the frame-work of the machine, means for enabling said key to control such independent movement of any of said column stops, and a counter-stop.

58. The combination of a carriage, a series of column stops normally in operative positions, means by which the stops may be moved individually to inoperative positions,

and by which the stop which may be so moved to inoperative position in each instance depends on the position of the carriage in its travel, and key-controlled decimal stops to cooperate with the first column stop which has not been so moved to inoperative position.

59. The combination of a carriage, a series of column stops movable independently of one another into and out of working positions, means by which the independent movement of said stops may be individually controlled and by which the stop which is so controlled in each instance depends on the position of the carriage in its travel, and a counter-stop.

60. The combination of a carriage, a series of column stops movable independently of one another into and out of working positions, means by which the independent movement of said stops may be individually controlled and by which the stop which is so controlled in each instance depends on the position of the carriage in its travel, and key-controlled denominational stops cooperative with such column stop as is determined by said means.

61. The combination of a carriage, a series of column stops carried by the carriage, said column stops normally in operative positions, means carried by the frame of the machine for displacing said column stops separately to inoperative positions, a counter-stop, and a key for projecting said counter-stop into the path of the first undisplaced column stop.

62. The combination of a carriage, a series of column stops carried by the carriage and each movable thereon independently of the other, means carried by the frame of the machine for so moving said column stops separately, the travel of the carriage effecting a relative movement between said column stops and said displacing means, whereby the column stop which may be so moved by said displacing means in each instance depends upon the position of the carriage in its travel, and a key-controlled counter-stop upon the frame of the machine.

63. The combination of a carriage, a machine frame, a series of independently movable column-stops on one of said parts, a column-stop controller on the other of said parts, said controller being cooperative, individually with the column-stops and rendered operative to move different column-stops individually by the movement of the carriage, whereby the column-stop which cooperates with said controller depends upon the position of the carriage along the line of its travel, and a counter-stop.

64. The combination of a carriage, a series of stops carried by said carriage and each displaceable from normal position in-

dependently of the others, and means on the frame of the machine for displacing said stops individually from normal positions.

65. The combination of a carriage, a series of column stops each individually displaceable from normal position, means for displacing said stops, and means controlled by the movement of the carriage for effecting a relative movement between said displacing means and said stops, to enable the displacing means to displace different column stops successively from normal positions.

66. The combination of a carriage, a series of column stops normally in operative positions, and means by which the column stops are individually rendered inoperative, the various positions of the carriage determining the various positions at which the stops are to be placed in inoperative positions.

67. The combination of a carriage, a series of independently movable column stops, means for moving the stops, and means controlled by the movement of the carriage for effecting a relative movement between said stop-moving means and said stops, to enable the stop-moving means to move different column stops successively; said stop-moving means comprising a key-actuated device for moving the column stops individually.

68. The combination of a carriage, a series of independently movable column stops, a column-stop mover, and means by which

said column-stop mover is rendered operative on different column stops to move them one at a time.

69. The combination of a traveling carriage, a stationary frame or support, a series of column stops movable independently of one another into and out of operative position, means for moving the stops out of operative position, means for moving the stops into operative position, one of said stop-moving means being carried by one of said frame and carriage parts, and the column stops being carried by the other of said parts.

70. The combination of a column stop movable from normal to abnormal position, a key at the keyboard, means controllable by the key for moving said stop, the key being normally disconnected from said stop, and means for maintaining said stop indefinitely in one of its said positions.

71. In a typewriting machine and tabulating mechanism, the combination of a plurality of column stops normally in effective positions, a key, and means controllable by the key for successively moving said stops from normal positions while the carriage is in motion, the key being normally disconnected from said stops.

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Witnesses:

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