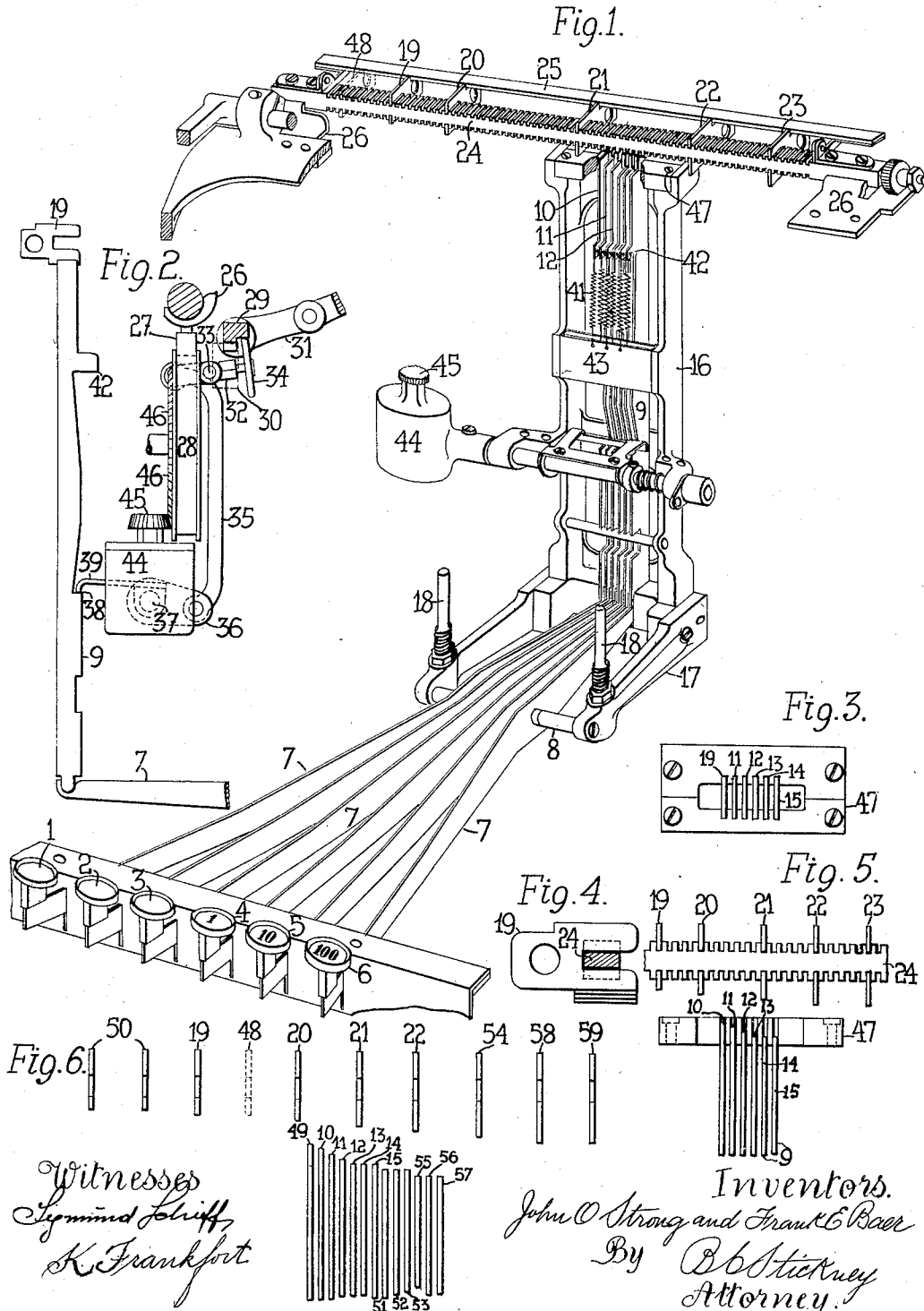


J. O. STRONG & F. E. BAER.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 10, 1909.

1,007,748.

Patented Nov. 7, 1911.



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UNITED STATES PATENT OFFICE.

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UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF
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TYPE-WRITING MACHINE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, JOHN O. STRONG and FRANK E. BAER, citizens of the United States, residing in the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to the tabulating mechanisms of typewriting machines, and particularly to those in which by selecting the proper key, the carriage of the typewriter may be set or arrested at any desired column or in position to write in any desired column on the page.

In making out bills and other documents it is frequently desired to write in a large number of columns, to indicate for instance the department, the salesman, the department amount, the lot number, the quantity, the articles, the price, the amount and the credit; and in order to meet the requirements of rapid operation it is necessary to provide for skipping those columns in which no entries are to be made. It is usual to provide one key on the typewriter for each column, so that by depressing any selected key, the carriage will be released and arrested at the proper point to write in the corresponding column. The carriage has always of course been arrested at the same point in each column, including those columns, in which prices or numbers were written, although the writing in such columns would have to begin at different points, depending upon the number of figures in each price or amount. This made it necessary for the operator after skipping to the desired column to reset the carriage in many cases one or two spaces either to the left or to the right in order to begin writing the price or amount at the proper point.

The principal object of the present invention is to provide a machine convenient for skipping to different columns and always arresting the carriage at the same point in each column except those columns which are devoted to prices or amounts, etc.; and as to these last columns to provide for arresting the skipping carriage in different decimal positions, so that the writing of the number or amount may begin at once without resetting the carriage. It is an aim of the invention to provide for this operation by a simple mechanism, easily understood

and operated, and readily applied to existing machines.

According to this invention all of the tabulator keys are "column skipping" keys, and certain of the keys are used one for each column, while a group of the remaining keys may be used for a single column for combined skipping and decimal-tabulating purposes. For instance one key may be employed for the salesman column, the next key for the department amount column, the next key for the lot number column, the next for the quantity column, the next key for the articles column (one key for each of said columns) while the next three keys may be connected to arrest the carriage at different decimal positions in the price column; and the next three keys may be devoted to arresting the carriage at different decimal positions in the amount column; and three more keys may be provided for the credit column. Thus any of the first keys may be employed to skip the carriage in the corresponding column, the writing always to begin at the same point in the column; while any key in the last group may be used not only to skip the carriage to its column, but also to arrest the carriage at the proper decimal position to begin writing the price or amount in such column. In other words either a hundreds or a tens or a unit skipping key may be employed to cause the carriage to skip the preceding columns and come to a stop in either the hundreds or tens or units position in the desired column.

The invention is illustrated as applied to an Underwood front strike writing machine, and many of the devices illustrated correspond with the construction shown in Patent No. 956,144, to J. C. McLaughlin.

In the accompanying drawings, Figure 1 is a perspective front view of a tabulating mechanism, embodying certain features of the present invention in one form. Fig. 2 is a sectional side elevation corresponding substantially with Fig. 7 of said patent. Fig. 3 is a plan of the skipping or selecting stops seen at Fig. 1. Fig. 4 is a side elevation of a series of stops seen at Fig. 5. Fig. 5 is an elevation of a short series of column stops, and also shows the arrangement of the key-controlled stops seen at Fig. 1. Fig. 6 is a diagrammatic elevation of one of the stop systems that may be constructed within the scope of the present invention.

Keys 1, 2, 3, 4, 5 and 6 are shown arranged in a row at the front part of the machine; these being carried upon depressible levers 7 of the first order fulcrumed upon a rod 8. At their rear ends said levers are connected respectively with upstanding metal blades 9 carrying at their upper ends stops 10, 11, 12, 13, 14 and 15 respectively. The stop blades 9 are mounted in a frame 16 having arms 17 provided with screws 18, whereby they may be secured to the framework of the typewriting machine. The stops 10 to 15 may be thrust up by the keys to cooperate with column stops 19, 20, 21, 22 and 23 adjustable independently of one another along a rack 24, which is provided with stop-receiving notches at letter-space intervals; the stops being releasably held in position by a locking bar 25. Said rack 24 is mounted upon a carriage 26, which is connected by a strap 27 to a spring barrel 28, and is provided with a letter-feeding rack 29 in mesh with an escapement pinion 30. The rack is hinged upon a pair of arms 31, so that it may be lifted away from the pinion to release the carriage. For this purpose a lever 32 is fulcrumed at 33 upon the framework and provided at its forward end with a roll 34 to engage and lift the rack. The rear end of the lever is pulled down by a pendent link 35 connected at its lower end to an arm 36, which projects from a rocker or rock-shaft 37. The latter rocks at each operation of a stop blade 9, said blades having lugs 38 any of which may lift up a transverse horizontal universal bar 39 secured upon said rock shaft 37. When the key is depressed the rod 9 is thrust up, thereby lifting the universal bar and rocking the shaft 37 to pull down the link 35 and lever 32 and lift the roll 34 and rack 29. Individual springs 41 caught in the ears 42 of the stop rods and extending to a fixed stop bar 43 serve to return the stops and keys to normal positions. A carriage brake is contained in a casing 44 secured upon the rock shaft and including a pinion 45 to mesh with a gear 46 provided on the carriage spring barrel, to prevent the carriage from running at excessive speed when released.

It will be observed that the column stops 19 to 23 extend varying distances below the rack 24 toward the upstanding key-operated stops, and also that the latter are of various lengths. The first column stop is the shortest of the series, and can be engaged only by the first key operated stop 10, which is the longest of the series. Hence when the carriage is at the extreme right hand position, if it is desired to release it and arrest it by means of the stop 19, it is necessary to depress the first key (1). If it is desired to arrest the carriage by means of the second column stop 20, that is, in position to write in the second column on the page, the second

key (2) is depressed, thereby thrusting up the stop 11, which is so short that it cannot intercept the column stop 19, so that the latter may skip by the said stop 11. Column stop 20 is however long enough to be engaged by said stop 11, so that the carriage is arrested in position to write in the second column. By means of the third key (3), the third stop (12) connected thereto, and a third column stop (21), the carriage may be arrested when desired in position to write in the third column, since the stop 12 is too short to intercept either 19 or 20, while it is long enough to intercept the stop 21.

If it should be desired to arrest the carriage by means of a fourth column stop 22, any one of the three remaining keys (4, 5, 6) may be employed; the stops 13, 14 and 15, connected respectively to these keys, being all too short to engage any of the stops 19, 20 and 21, but long enough to engage a stop 22. Said stops 13, 14 and 15 are arranged at letter space intervals in the rack 24, and accordingly will cooperate with the column stop 22 to arrest the carriage at different decimal positions in the same column, according to the key operated. The key 4, which bears the number "1", will serve to arrest the carriage in the units position; key 5, bearing the number "10", will arrest the carriage in the tens position, and key 6, bearing the number "100", will arrest the carriage in the hundreds position.

Thus it will be seen that all of the keys 1 to 6 are column-skipping keys, and that the first three may be employed to arrest the carriage in position to begin writing in the first three columns; while any one of the last three keys may be employed to cause the carriage to skip the first three columns and to be arrested in the fourth column at the desired denominational position. The first three keys are hence simple column-skipping keys, while the last three keys are combined column-skipping and denominational keys.

An additional stop 23, similar to 22 may be employed to cooperate with the keys 4, 5, 6, for arresting the carriage denominationally in the fifth column. It will also be understood that an additional column stop 48, shown in dotted lines at the left of stop 19 and of the same size as the latter, may be employed, if desired, to cooperate with stop 10. It will also be understood that any or all of the stops 19, 20 and 21 may be duplicated at any desired positions along the rack 24, for certain classes of work, and the series of graduated stops 10, 11, 12 may be increased in number by adding long stops at the left hand side of the group, as at 49, Fig. 6; the number of gradations of the column stops being increased accordingly, as at 50.

At Fig. 6 is shown a system containing

more column stops and key-operated stops than at Fig. 1; and it will be understood that each of the lower stops at this figure is provided with an operating key. A second group of denomination stops is seen at 51, 52, 53, to coöperate with a column stop 54 longer than 22; while a third denominational group 55, 56, 57 may coöperate with a column stop 58, which is longer than 54; and if desired an additional stop 59 similar to 58 may be provided for coöperation with stops 55, 56, 57 after the carriage has been arrested by stops 58.

It will be seen at Fig. 4 that the column stops are forked to fit upon the bar 24, and that the lower portions of the forks are of graduated lengths or depths for the purpose set forth.

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

Having thus described our invention, we claim:

1. In a tabulating mechanism, the combination with a carriage, of a series of column stops of graduated lengths, and a series of key-operated column-selecting stops of various lengths to coöperate with said column stops to arrest the carriage in different columnar positions dependent upon the key operated, so that by depressing any selected key the carriage may be arrested at a mechanically determined column; a plurality of said column-selecting stops being of equal length and mounted at letter-space intervals to arrest the carriage at different decimal positions in a certain column exclusively; and all of said column-selecting stops normally clear of said column stops.

2. In a tabulating mechanism, the combination with a carriage, of a series of adjustable column stops of various lengths, and a series of key-operated column selecting stops of such lengths as to coöperate with said column stops to arrest the carriage in different columnar positions dependent upon the key operated, so that by depressing any selected key the carriage is arrested at the column mechanically determined by the operated key; a plurality of said key-operated column-selecting stops being of the same length and shorter than the others and spaced at letter-space intervals to coöperate with the longest column-stop to arrest the carriage at different decimal positions in the last column exclusively; and all of said column-selecting stops normally clear of said column stops.

3. In a tabulating mechanism, the combination with a carriage, of a series of adjustable column stops of various lengths, the longest stops being at one end of the series, and a series of key-operated column-selecting stops of such lengths as to coöperate with said column stops to arrest the car-

riage in different columnar positions according to the key operated, so that by depressing any selected key the carriage is arrested at any desired column; a plurality of said key-operated column-selecting stops being of the same length and shorter than the others and spaced at letter-space intervals, to coöperate with said longest column-stops in succession, to arrest the carriage at different decimal positions in each of a plurality of columns.

4. In a typewriting and tabulating machine, the combination with a carriage having a rack, of a series of column stops adjustable along the rack and of graduated lengths, and a series of key-operated stops mounted at letter-space intervals and of various lengths to enable the keys to select mechanically the column at which the carriage shall stop, a group of said key-operated stops being of equal length to coöperate with a certain one of said column stops exclusively to arrest the carriage at different decimal positions in the corresponding column; all of said key-operated stops being normally clear of said column stops.

5. In a tabulating mechanism, the combination with a carriage, of a series of column stops of graduated lengths, and a series of key-operated column-selecting stops of various lengths to coöperate with said column stops to arrest the carriage in different columnar positions according to the key operated, so that by depressing any selected key the carriage may be arrested at the corresponding column; a group of said column-selecting stops being of equal length and mounted at letter-space intervals to arrest the carriage at different decimal positions in a certain column, and a second group of said column-selecting stops shorter than those in the first group, but of equal length with one another, and mounted at letter space intervals to arrest the carriage at different decimal positions in another column.

6. In a typewriting and tabulating machine, the combination with a carriage having a rack, of a series of column stops adjustable along the rack and of graduated lengths, and a series of key-operated stops mounted at letter-space intervals and of various lengths to enable the keys to select the column at which the carriage shall stop, the key-operated stops in a certain group being of equal length to coöperate with a certain one of said column stops to arrest the carriage at different decimal positions in the corresponding column, and the key-operated stops in a certain other group being shorter than those in the first group but equal in length with one another, to arrest the carriage at different decimal positions in another column.

7. In a tabulating mechanism, the com-

5 bination with a carriage, of a series of adjustable column stops of various lengths, and a series of key-operated column selecting stops of such lengths as to cooperate with said column stops to arrest the carriage in different columnar positions dependent upon the key operated, so that by depressing any selected key the carriage is arrested at the column mechanically determined by the operated key; a plurality of said key-operated column-selecting stops being of the same length and shorter than the others and spaced at letter-space intervals to cooperate with the longest column-stop to arrest the carriage at different decimal positions in the last column exclusively, and carriage-releasing mechanism operable by the stop-setting strokes of said keys; all of said column-selecting stops being normally clear of said column stops.

20 8. In a typewriting and tabulating machine, the combination with a carriage having a rack, of a series of column stops adjustable along the rack and of graduated lengths, and a series of key-operated stops mounted at letter-space intervals and of various lengths to enable the keys to select mechanically the column at which the car-

riage shall stop, a group of said key-operated stops being of equal length to cooperate with a certain one of said column stops exclusively, to arrest the carriage at different decimal positions in the corresponding column; all of said column-selecting stops being normally clear of said column stops.

35 9. In a tabulating mechanism, the combination with a carriage, of a series of adjustable column-stops of assorted lengths, a series of keys, column-selecting stops settable by said keys and of assorted lengths corresponding with the lengths of the column stops, so as to cooperate with the latter to arrest the carriage in different columnar positions, dependent upon the key operated, and a carriage-releasing mechanism operable by the stop-setting strokes of any of said keys; so that by depressing any selected key the carriage is released and arrested at the column mechanically determined by the operated key.

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