B. C. STICKNEY.

TYPEWRITING MACHINE.

APPLICATION FILED JAN. 17, 1918.

1,364,651.

Patented Jan. 4, 1921

2 SHEETS—SHEET 1.

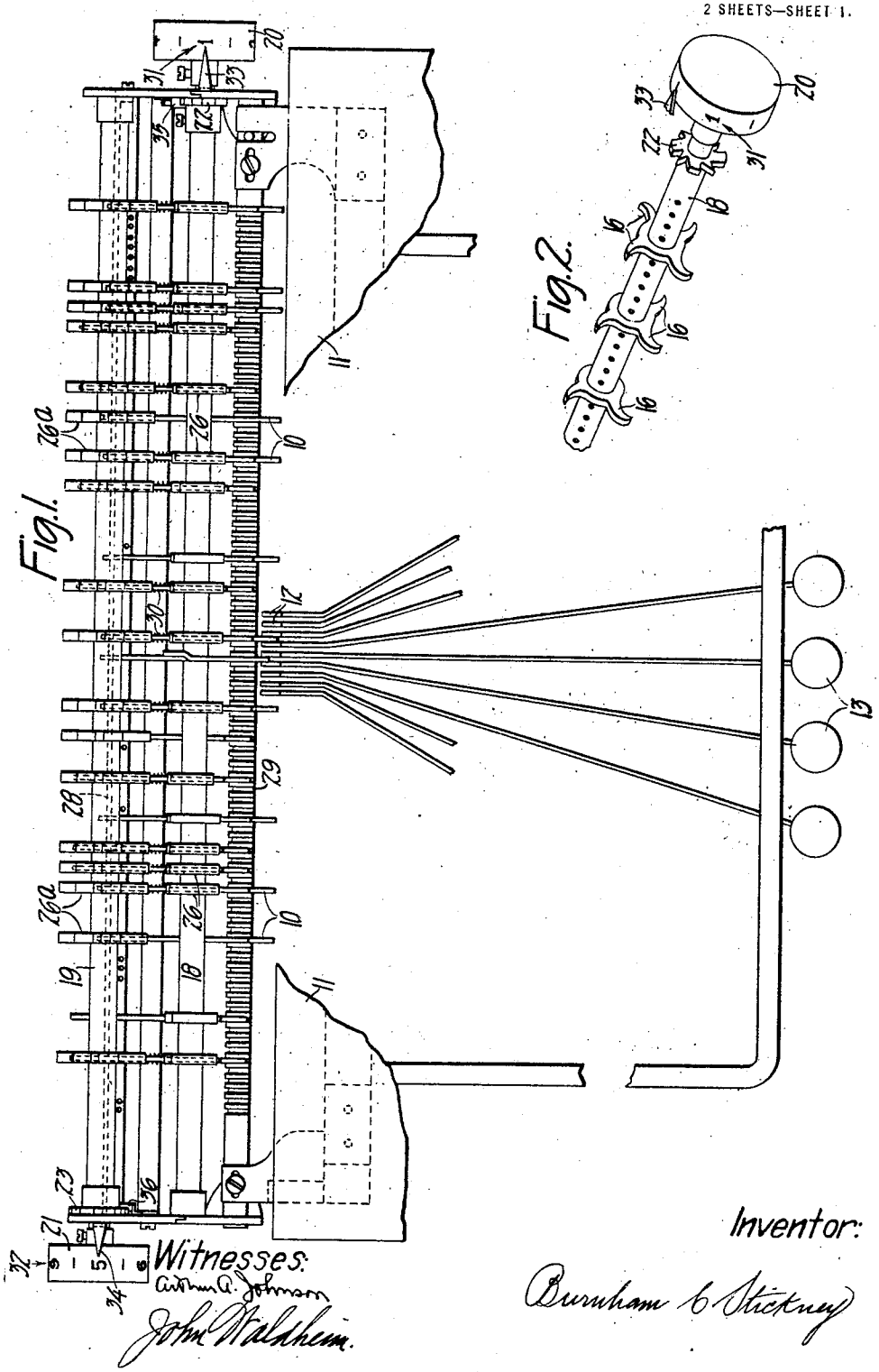


Fig. 1.

Fig. 2.

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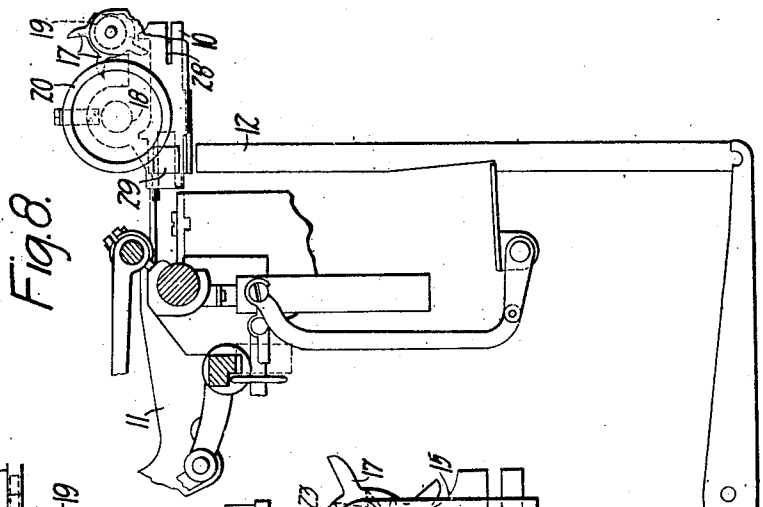


Fig. 8.

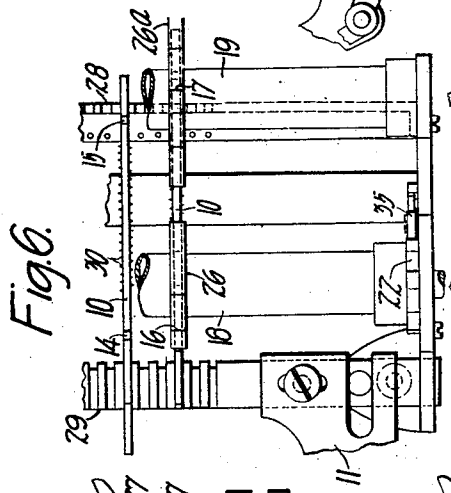


Fig. 6.

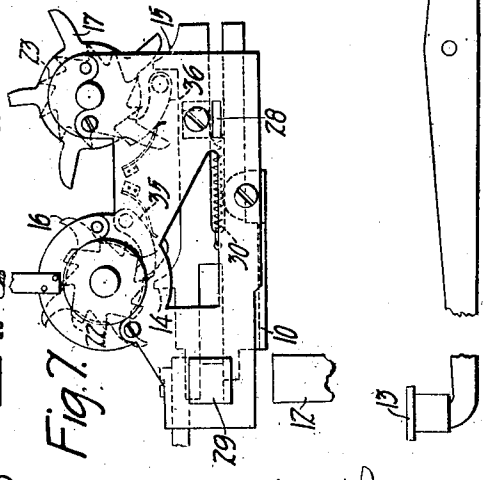


Fig. 7.

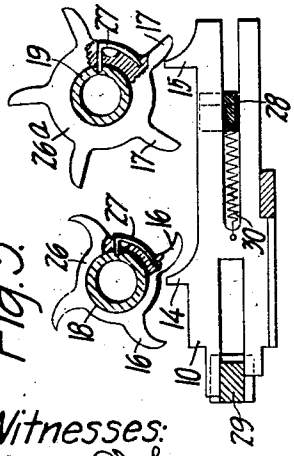


Fig. 3.

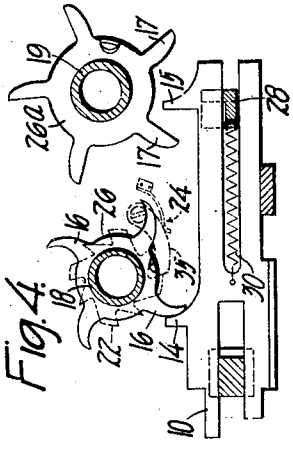


Fig. 4.

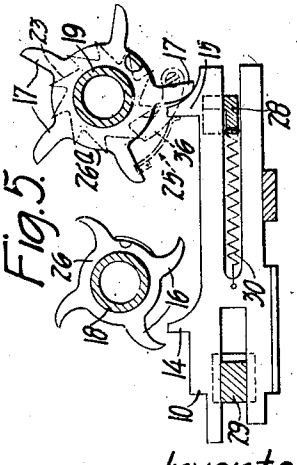


Fig. 5.

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UNITED STATES PATENT OFFICE.

BURNHAM C. STICKNEY, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPEWRITING-MACHINE.

1,364,651. Specification of Letters Patent. Patented Jan. 4, 1921.

Application filed January 17, 1918. Serial No. 212,215.

To all whom it may concern:

Be it known that I, BURNHAM C. STICKNEY, a citizen of the United States, residing in Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Typewriting-Machines, of which the following is a specification.

This invention relates to tabulating devices for the carriages of typewriting machines, and particularly to means for selectively bringing into use different sets of column-stops.

In the patent to McLaughlin No. 941,166 of November 23, 1909, the column-stops are arranged at certain letter-space intervals on the typewriter carriage. These column-stops are normally out of working positions, but by means of a special mechanism different sets of stops may be projected to working positions at will. Each of the column-stops is provided with a lug or shoulder, and along the row of shoulders extends a revoluble shaft, having thereon different sets of tappets for engagement with corresponding shoulders of the column-stops, so that by rotating said shaft to different positions, corresponding sets of column-stops will be projected from idle to working positions. The tappets are made in different forms, and are adjustable to different letter-space positions along the shaft, so that any desired combination of tappets may be made up.

One of the objects of the present invention is to increase the capacity of a stop-setting mechanism of this nature. While the invention may be carried out in numerous forms, still for the sake of convenience it is illustrated in connection with the form of tabulating mechanism which is disclosed in said Letters Patent.

In carrying out the invention, provision is made for substantively increasing the number of tappets, whereby the column-stops may be projected, so that the capacity of the machine is increased, and many more settings or combinations of stops are permitted.

Instead of providing each column-stop with a single shoulder or lug, as in said Letters Patent, I provide it with two or more such stop-setting elements, thus forming two or more rows of shoulders extending along the carriage; and for each such row of shoulders I provide a separate multiple stop-setting device in the form of a rotatable shaft having thereon stop-setting elements or tappets for engaging the shoulders to set the stops. These shafts may be placed one behind the other, and the tappets thereon may be so arranged that any stop may be operated by either rock shaft without collision with any tappet upon the other rock shaft. The tappets on each shaft may be formed in single, double, triple or other multiple form, as parts of stop-setting members which may be adjusted along the shaft and secured thereto in the manner set forth in said Letters Patent; and each shaft may be provided with a finger-piece for rotating the same independently of the other shaft, and with means for holding it where set. Each shaft is also preferably provided with indicating means to designate its different stop-setting positions, said means comprising an index and a scale, the scale on the first shaft, for example, being provided with the numbers "1" to "4", and that upon the second shaft with the numbers "5" to "9"; any additional shafts being given higher numbers, so that when desiring to use any particular setting of the column-stops, the operator will turn the proper shaft until the corresponding number thereon is opposite its index. While I have illustrated one shaft as capable of making four different settings of the column-stops, and another shaft as capable of making five other different settings of stops, still it will be understood that each shaft may be capable of making either less or more settings, and any desired plurality of shafts may be used. If, however, only two shafts are used, other settings, in addition to those which are made by each shaft individually, may be had in some cases by the combined use of said shafts in their different positions, in which case the indicating means of the two devices may be used to give combination indications representative of all the different combination stop-settings which may be effected by the two devices when used conjointly.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a plan view of the tabulator, comprising column-stops and the setting devices associated therewith.

Fig. 2 is a perspective view of one of the stop-setting devices, showing different sets of stop-setting tappets thereon.

Fig. 3 is a fragmentary sectional side view, showing a column-stop in its normal ineffective position and two sets of tappets associated therewith, and the shafts on which they are mounted.

Fig. 4 is a view similar to Fig. 3, showing the column-stop set to its working position by the first setting device.

Fig. 5 is a view similar to Fig. 4, except that the column-stop has been set by the second setting device.

Fig. 6 is a fragmentary and enlarged plan view of one end of the typewriter carriage, showing a stop-carrying bar and the column-stop-setting devices supported by said carriage.

Fig. 7 is an end elevation of the parts seen in Fig. 6.

Fig. 8 is a side view, somewhat diagrammatic, showing the principal parts of the tabulating mechanism.

The column-stops 10 are shown arranged in a row upon a letter-feeding typewriter carriage 11, usual in the Underwood typewriting machine, and out of positions for coöperating with the usual decimal-stops 12 which are projected by the usual tabulator keys 13.

Each column-stop 10 has two or more stop-setting elements herein disclosed as lugs or shoulders 14 and 15 which are in position to be engaged by spurs, tappets, or other stop-setting elements 16 and 17 carried upon rotatable shafts 18 and 19, respectively, which extend horizontally across the machine parallel with the rows of shoulders or lugs. The shafts have finger-pieces 20 and 21, whereby they may be rotated, and detent wheels 22 and 23 having spring-checks 24 and 25 whereby they will be held in position. If desired, each check may be provided with a finger-piece for withdrawing it from the notches in the detent wheels.

The spurs may be formed upon separate stop-setting members herein disclosed as collars 26 and 26^a adjustably connectible to said shafts 18 and 19 by means of lugs 27, as set forth in said Letters Patent, and each collar may have from one to five or more spurs thereon. In the drawings, the forward shaft 18 is illustrated with collars 26 having as many as four spurs 16, while the rear shaft has collars 26^a provided with from one to five spurs 17. By setting a variety of collars or adjustable devices 26 and 26^a in a variety of places along the shafts, provision may be made for projecting any desired arrangement of column-stops and for shifting the arrangement when desired, by merely rotating the shaft 18 or 19, or both shafts, as will hereinafter appear.

The lugs 14 and 15 are arranged one behind the other and the spurs 16 and 17, on the forward and rear shafts, respectively, for operating said lugs, are arranged in the same plane with the column-stop 10. The column-stops may be set by either the front shaft or the rear shaft, because in either case the lug which is out of use does not collide with the spur upon its associated shaft; suitable clearance being provided for avoiding such collision. In other words, the same column-stops may be set by either shaft independently of the other shaft. Thus, for example, a single column-stop may be capable of setting by four spurs upon the forward shaft and five spurs upon the rearward shaft, so that said stop will be set to any position to which either shaft may be turned, and obviously the same column-stop may be settable by more than nine spurs. Thus, a wider range of the capacity of the machine is secured, and the range may be increased by increasing the number of spurs upon the shaft, or by increasing the number of shafts, or by the adoption of both expedients.

The column-stop blades are made longer than those disclosed in said patent, so as to afford room for the additional lugs thereon; each column-stop blade being guided in a rear rack 28, and also by slots in the front rack 29, substantially as set forth in said Letters Patent; and each being also provided with a retracting spring 30 to return the stop to normally ineffective position, whenever, in the rotation of the active shaft, a shaft-spur escapes from the stop-lug; said shaft-spurs being formed to hold the lugs projected by the aid of the spring-checks 24, 25.

Scales 31 and 32 are provided to position the shafts 18 and 19, respectively. The scales have indicators 33 and 34 associated therewith to assist in selecting the various arrangements of stops which correspond to numerals "1" to "4" on the bar 18, and "5" to "9" on the bar 19. These scales are preferably arranged on the finger-wheels 20 and 21, and the numbers thereon may denote various positions to which the setting shafts may be rotated to selectively move the column-stops to their working positions in different arrangements; these arrangements of the stops corresponding to different forms of work which may be typed by the machine.

It should be understood that some of the column-stops may have only one adjustable collar or device having the tappets associated with said column-stops, and that said collars may be distributed on both setting shafts. It will be seen that with this arrangement of adjustable collars adjusted on a plurality of manually-controlled shafts, there can be had, in addition to those group settings or set arrangements of column-stops corresponding with numerals upon the finger-wheels 20 and 21, certain other group

stops of said series in different combinations, including settings differing from those which may be effected by the other, the relation between said stops and the members and elements of said setting devices being such that said devices may be operated concomitantly to effect a plurality of predetermined group settings of said stops, in various combinations differing from those which may be effected by either device alone.

5. A combination tabulating mechanism comprising, in combination, a single series of settable tabulating stops, and a plurality of selective multiple-stop-setting devices, each capable of concomitantly effecting different predetermined group settings of stops of said series, and also capable of conjoint use to effect various combination settings of stops of said series, each of said setting devices being provided with indicating means to designate its different stop-setting positions, said indicating means of the two devices being capable of giving combination indications representative of all the different combination stop-settings which may be effected by the two devices when used conjointly.

6. The combination with a carriage, of a set of column-stops, a tabulator stop, and a plurality of setting devices, each capable of independent operation to set different groups of stops of said set to effective working positions, the stops of each group being set concomitantly, each of said column-stops having a plurality of setting shoulders or parts, to enable it to be set by either of said setting devices as one of a number of stops selected for a predetermined group-setting.

7. A tabulating mechanism comprising, in combination, a series of column-stops, each movable from a normal position to a set position, resilient stop-restoring means tending to restore said stops, when set, to their normal positions, a plurality of rotatable multiple-stop-setting devices, each capable of being turned, by a series of partial rotations, through a plurality of neutral and effective stop-setting positions in alternation, each of said devices having a plurality of stop-setting elements, different groups of which may be caused to concomitantly and selectively engage and set different predetermined groups of said stops on movement of said setting device through its different stop-setting positions, and means for maintaining each of said setting devices in any of its neutral positions, and for also maintaining it in any of its stop-setting positions, so as to maintain the corresponding group of stops, set thereby, in their set positions, against the counteracting influence of said stop-restoring means, the relation between said stop-setting devices being such that neither device, when in its neutral position, will interfere with the setting of any of said stops by the other.

8. In a typewriter, in combination, a carriage, a support therefor, a tabulator-stop mounted in one of said parts, a set of column-stops mounted in the other of said parts, a selective multiple-stop-setting device capable of setting a plurality of predetermined stops of said set concomitantly, and a second selective multiple-stop-setting device capable of effecting settings of a different plurality of predetermined stops of said set concomitantly, said setting devices being capable of being used conjointly, as well as singly, so as to be capable of selectively effecting combination settings of said stops different from and greater than those which may be effected by either setting device alone.

9. In a typewriting machine, in combination, a carriage, a support therefor, a tabulator-stop mounted in one of said parts, a set of column-stops mounted in the other of said parts, and a plurality of selective multiple-stop-setting devices for said column-stops, each of said devices comprising stop-setting elements in setting relation respectively with different column-stops of said set, certain of said stop-setting elements having a plurality of stop-engaging members, the different members of each element being capable of being caused to set the same stop a plurality of times in succession as a result of a succession of operations of the stop-setting device of which it is an element, the stop-setting elements of the same setting device including elements differing from each other as to their respective numbers of stop-engaging members, said stop-setting devices being capable of independent operation to selectively effect variable group settings of column-stops of said set, the stops of each group being set concomitantly.

10. In a typewriting machine, in combination, a carriage, a support therefor, a tabulator-stop mounted in one of said parts, a set of column-stops mounted in the other of said parts, and a plurality of selective multiple-stop-setting devices for said column-stops, said devices comprising stop-setting elements in setting relation with column-stops of said set, the stop-setting elements of one of said devices being independently settable at varying positions with respect thereto, so as to be capable of being selectively caused to be brought into stop-setting relation with different column-stops of said set, said stop-setting devices being capable of independent operation to selectively effect different group settings of column-stops of said set, the stops of each group being set concomitantly.

11. In a typewriting machine, in combination, a carriage, a support therefor, a tabu-

settings or arrangements for which a setting of both shafts is required, thus increasing the range of capacity of the machine with any additional shafts or tappets; as, for example, the shaft 18 may be set to "1." If the shaft 19 is at the same time set at "4," a set arrangement is had, which differs from any of the arrangements of the stops set up by any individual shaft. If the shaft 18 is left in its "1" position and the shaft 19 rotated to its "5" position, still another arrangement is had. In this way many other arrangements of stops may be had. It may be observed that the indexing means of the two setting devices, when used conjointly, may be regarded as a combination indexing means capable of giving indications representative of all the different combination settings which may be effected thereby. In the two examples just given the first setting would be designated as number "14" and the second as number "15."

When one of the setting shafts is to be used alone, the other shaft is first moved to a neutral position, to render the tappets ineffective, by rotating it until a dash ("—") between the numerals on the scale of the finger-piece comes opposite the corresponding pointer.

The spring-checks 24 and 25 may comprise pawls 35 and 36 coöperating with the toothed wheels 22 and 23 on the setting shafts 18 and 19, respectively. These pawls prevent the backward rotation of their respective shafts, which the springs 30 have a tendency to cause through the intermediary of the column-stops 10. It will be seen that the teeth on the wheels 22 and 23 are so shaped that the setting shafts 18 and 19 may be rotated, in the opposite direction, to set the stops 10.

The pawls 35 and 36 may be shaped to fit between the teeth of the wheels 22 and 23, so as to yieldingly hold the setting bars, to prevent accidental displacement thereof from a neutral position, which may be caused by the jarring of the machine.

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. A tabulating mechanism comprising, in combination, a plurality of multiple-stop-setting devices, each having a plurality of differentiated stop-setting members, including members having variably-positioned stop-setting elements, and a series of column-stops, each having a plurality of stop-setting elements, one for each of said setting devices, by which its stop may be engaged and set by one or more elements of a member of one of said setting devices, said setting devices being each capable of independent operation to effect a plurality of predetermined group settings of stops of said series in different combinations, including settings differing from those which may be effected by the other.

2. A tabulating mechanism comprising, in combination, a plurality of multiple-stop-setting devices, each having a plurality of differentiated stop-setting members, including members having variably-positioned stop-setting elements, and a series of column-stops, each having a plurality of stop-setting elements, one for each of said setting devices, by which its stop may be engaged and set by one or more elements of a member of one of said setting devices, said setting devices being each capable of independent operation to effect a plurality of predetermined group settings of stops of said series in different combinations, including settings differing from those which may be effected by the other, the relation between said stops and the members and elements of said setting devices being such that said devices may be operated concomitantly to effect a plurality of predetermined group settings of said stops, in various combinations differing from those which may be effected by either device alone.

3. In a tabulating mechanism, in combination, a plurality of multiple-stop-setting devices, each comprising a shaft having mounted thereon a plurality of stop-setting members including members having variably-positioned radial stop-setting arms, said devices being mounted side by side for rotation about parallel axes, and a series of neighboring column-stops spaced at intervals along said shafts, each having a plurality of stop-setting shoulders, one for each of said setting devices, each shoulder being capable of being engaged by one or more of the arms of a member of one of said setting devices, said setting devices being each capable of independent operation to effect a plurality of predetermined group settings of stops of said series in different combinations, including settings differing from those which may be effected by the other.

4. In a tabulating mechanism, in combination, a plurality of multiple-stop-setting devices, each comprising a shaft having mounted thereon a plurality of stop-setting members including members having variably-positioned radial stop-setting arms, said devices being mounted side by side for rotation about parallel axes, and a series of neighboring column-stops spaced at intervals along said shafts, each having a plurality of stop-setting shoulders, one for each of said setting devices, each shoulder being capable of being engaged by one or more of the arms of a member of one of said setting devices, said setting devices being each capable of independent operation to effect a plurality of predetermined group settings of

lator-stop mounted in one of said parts, a set of column-stops mounted in the other of said parts, and a plurality of selective multiple-stop-setting devices for said column-stops, each of said devices comprising a set of independently-adjustable stop-setting elements settable at varying positions with respect thereto, so as to be capable of being selectively caused to be brought into stop-setting relation with different column-stops of said set, said stop-setting devices being capable of independent operation to selectively effect group settings of column-stops of said set, the stops of each group being set concomitantly, said stop-setting devices being also capable of a conjoint use, as a combination stop-setting mechanism, to effect other settings of column-stops of said set, the settings capable of being effected by said devices when used in combination far exceeding the sum of those capable of being effected by both when used independently.

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