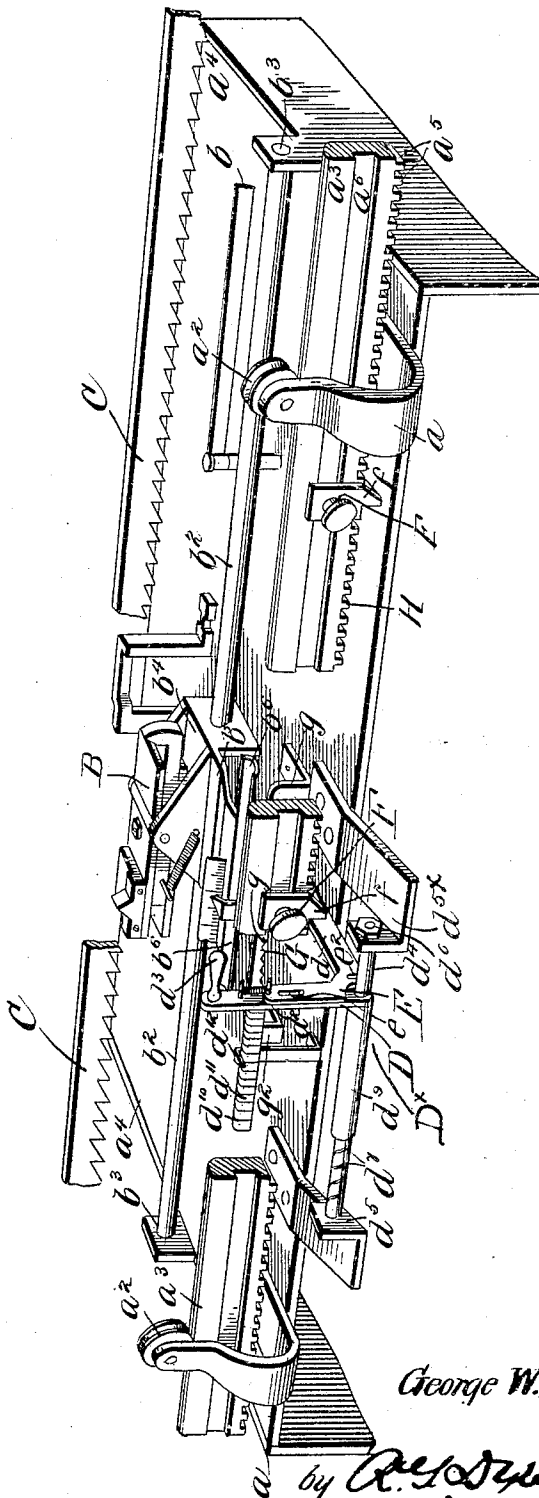


929,838.

7.62.7



Witnesses

Witnesses
W. F. Hark.
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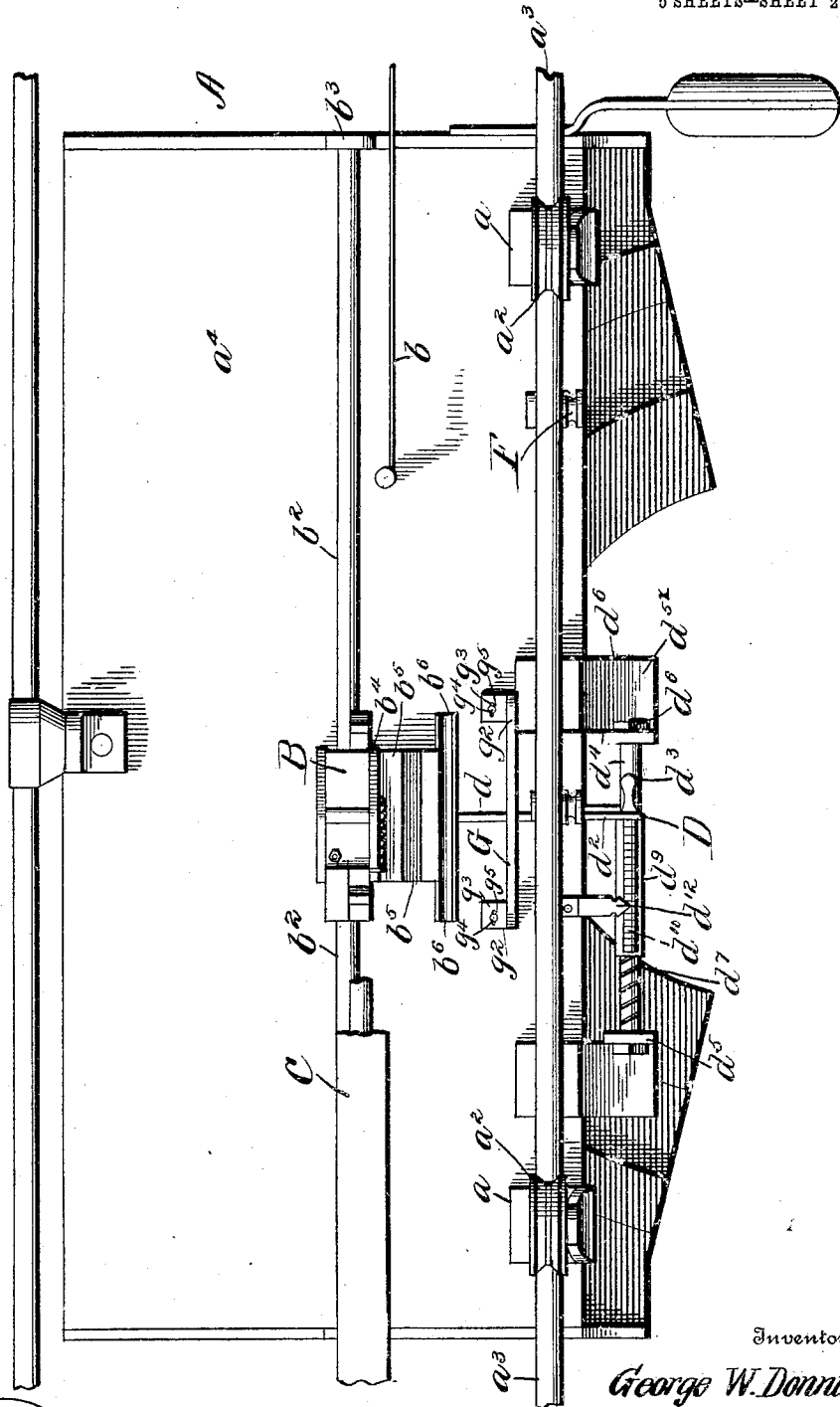
G. W. DONNING.
 TABULATING DEVICE FOR TYPE WRITERS.
 APPLICATION FILED AUG. 5, 1904.

929,838.

Patented Aug. 3, 1909.

5 SHEETS—SHEET 2.

Fig. 2.



Witnesses
W. F. K. L.
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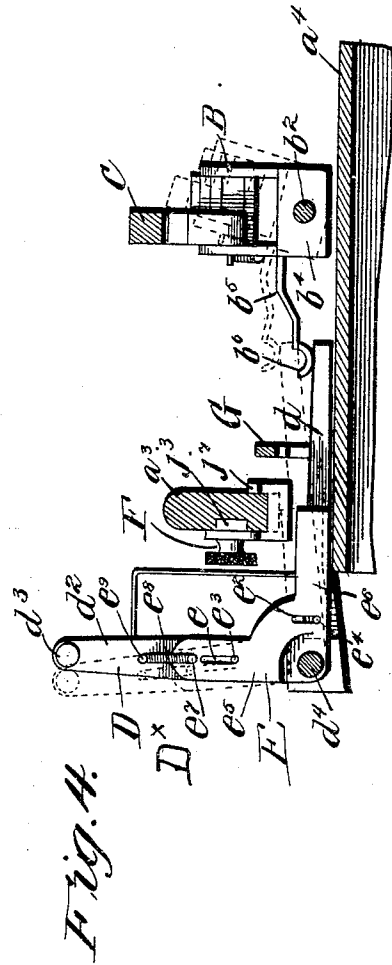
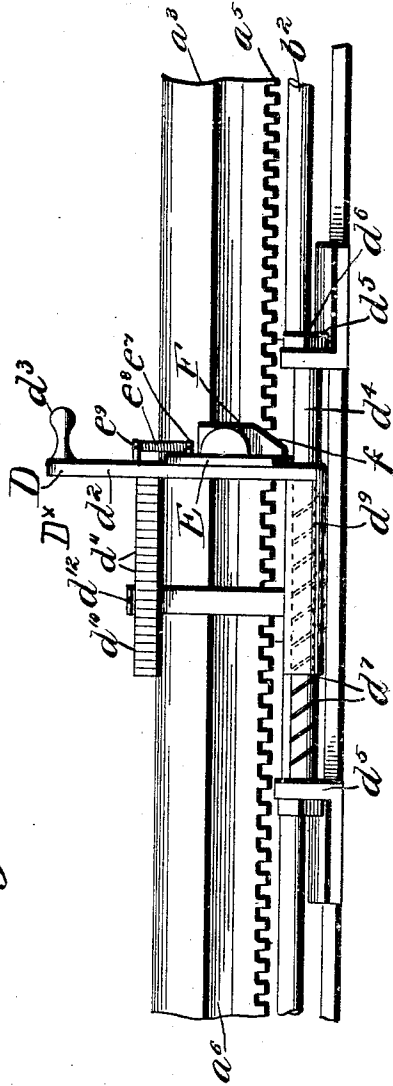
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 his Attorney

G. W. DONNING.
 TABULATING DEVICE FOR TYPE WRITERS.
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929,838.

Patented Aug. 3, 1909.
 5 SHEETS—SHEET 3.

Fig. 3.



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 TABULATING DEVICE FOR TYPE WRITERS.
 APPLICATION FILED AUG. 5, 1904.

929,838.

Patented Aug. 3, 1909.
 5 SHEETS—SHEET 4.

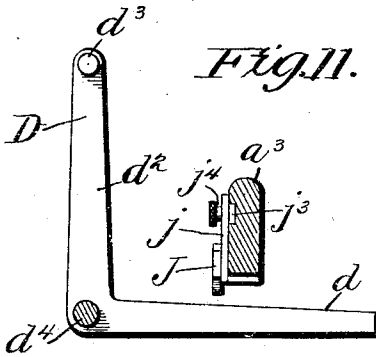


Fig. 11.

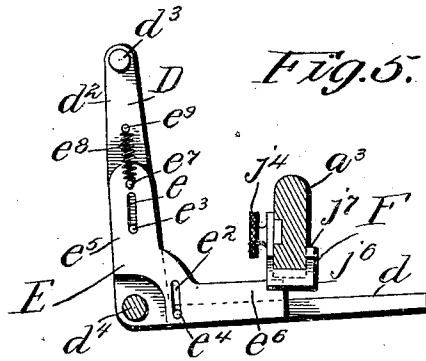


Fig. 5.

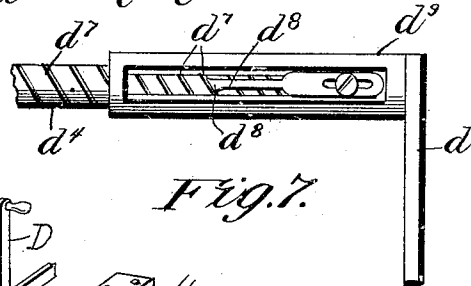


Fig. 7.

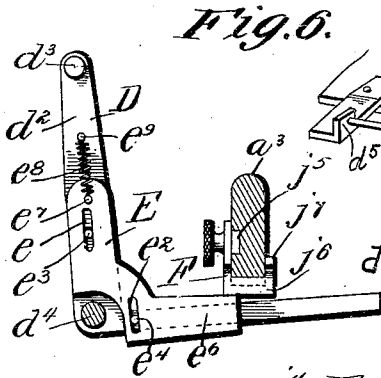


Fig. 6.

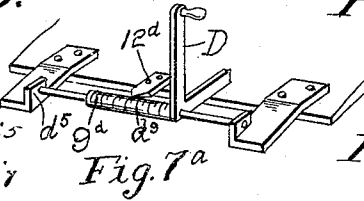


Fig. 7a.

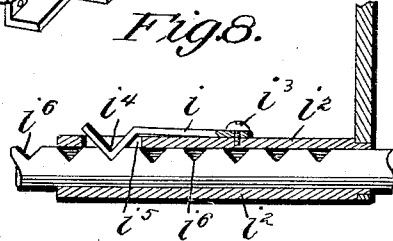


Fig. 8.

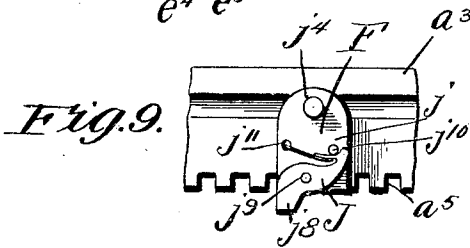


Fig. 9.

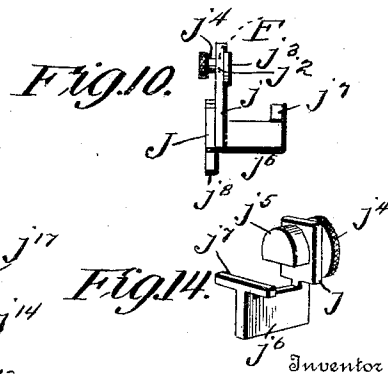


Fig. 10.



Fig. 12.

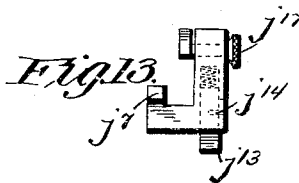


Fig. 13.

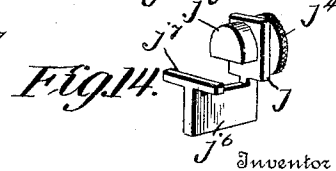


Fig. 14.

Witnesses
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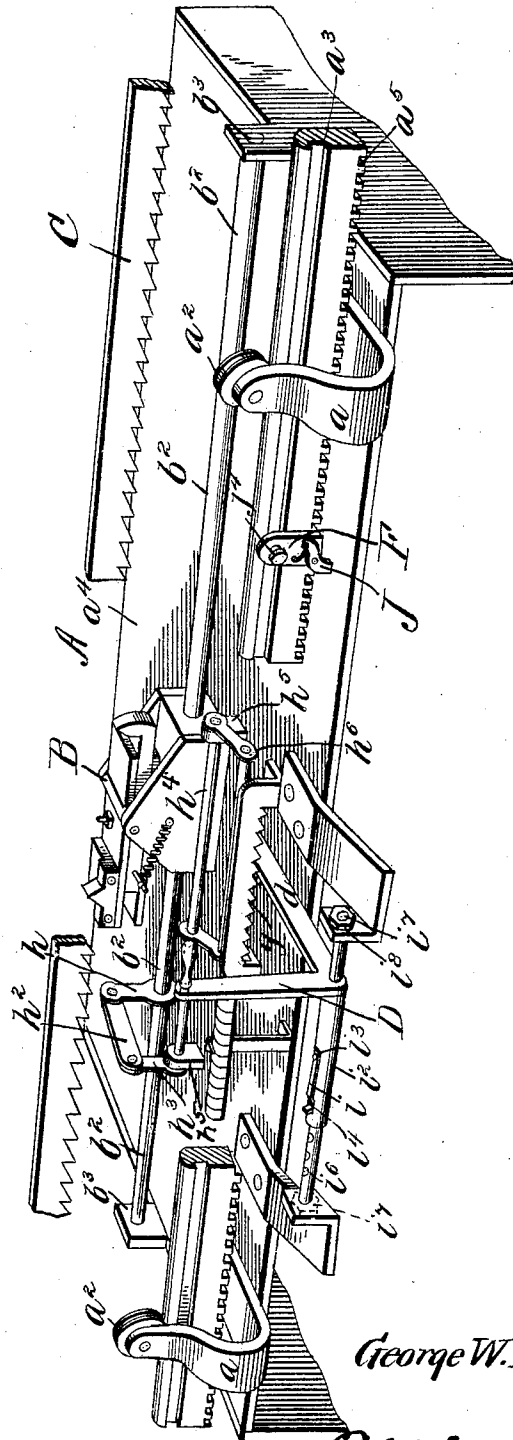
G. W. DONNING.
 TABULATING DEVICE FOR TYPE WRITERS.
 APPLICATION FILED AUG. 5. 1904.

929,838.

Patented Aug. 3, 1909.

5 SHEETS—SHEET 5.

Fig. 15.



Witnesses
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 his attorney

UNITED STATES PATENT OFFICE.

GEORGE W. DONNING, OF STAMFORD, CONNECTICUT, ASSIGNOR TO HARRY T. AMBROSE,
OF ORANGE, NEW JERSEY.

TABULATING DEVICE FOR TYPE-WRITERS.

No. 929,838.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed August 5, 1904. Serial No. 219,636.

To all whom it may concern:

Be it known that I, GEORGE W. DONNING, a citizen of the United States, residing at Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Tabulating Devices for Type-writers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The object of the present invention is to provide means, in connection with a typewriter or other writing-machine, for facilitating the positioning and stopping of the traveling-carriage thereof at predetermined points, as for tabulating, or other like work.

Furthermore, the object is to present a typewriter embodying means for effecting easy, absolutely certain, and arbitrary positioning of the traveling carriage at any predetermined point in its travel by initially-selecting the point to which said carriage is to be moved and, thereupon, moving said carriage to said point.

Furthermore, the object is to present a tabulating device for use, particularly, in flat-platen typewriters, by which the operator shall, at all times, retain full and absolute control of the carriage, whereby the usual shock and jar occasioned by the sudden arresting of the carriage, at a tabulator-stop or abutment, is obviated.

Furthermore, the object is to produce a tabulating device for typewriters capable of accurately positioning the device in an easy and expeditious manner, with necessity of operating only a minimum number of parts to effect the result.

Furthermore, the object is to present means whereby the carriage is arrested, in its travel in one direction, at predetermined points, without jar or shock to the machine, and be capable of latching by said means without displacement or re-arranging the parts thereof during its return to its initial or starting point, that is, in a direction opposite to that of writing.

Furthermore, the object is to present indicating means for showing the position on a selecting member of the relative printing point.

The invention has other objects which will more fully appear hereinafter.

With these objects in view, the invention

resides in the novel construction, arrangement, and combination of parts more fully hereafter described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, I have illustrated one of many embodiments of my invention, it being understood that the same is capable of great variation without departing from the spirit thereof.

In these drawings: Figure 1 is a view in perspective of the transversely-traveling carriage of a flat-platen typewriter, carrying, on its top-plate, letter-spacing mechanism and my improved tabulator device, some parts of the machine being broken away to show others more clearly; Fig. 2 is a view in plan thereof; Fig. 3 is a view in front elevation thereof; Fig. 4 is a view in side elevation thereof, showing, in dotted lines, the parts of the device when operated; Figs. 5 and 6 are views in detail, showing the latching-device, disposed on the tabulating operator-lever, in its various operative positions with relation to a tabulator-stop; Fig. 7 is a detached bottom plan view of the tabulating-selecting-lever; Fig. 7^a is a fragmentary view of a modified form of the indicating instrumentalities of the structure; Fig. 8 is a view of a modified form thereof; Figs. 9 and 10 are views respectively in front and side elevation of a form of tabulator-stop; Fig. 11 is a view in side elevation, showing the tabulator operating-lever without a latching-device,—the stop being provided with such device; Figs. 12 and 13 are views respectively in front and side elevation of another form of latching-device stop; Fig. 14 is a view in perspective of still another form of stop; Fig. 15 is a view in perspective, similar to Fig. 1, of a somewhat different arrangement and construction of parts.

Referring to the drawings, and particularly to Figs. 1 to 8 thereof, A designates a transversely-traveling carriage of a flat-platen typewriter, supported in front by brackets *a*, carrying rollers or wheels *a*², upon a transverse rail or track *a*³. The rear transverse supporting rail or track is omitted in the drawings for the sake of clearness. Disposed upon the top-plate *a*⁴ of the carriage is an escapement or letter-spacing mechanism B, arranged to coöperate with a rack-bar C located above the same, for effecting letter-spacing of the carriage, which is propelled

against the escapement-mechanism by means of a power-spring (not shown) with which connects the drawing tape *b*. This letter-spacing constitutes the subject-matter of another, co-pending application for patent of mine, filed April 26, 1902, Serial No. 104,843; and, therefore, no claim thereto is made herein, and a detailed description thereof is unnecessary. The said letter-escapement mechanism is arranged to be tilted out of engagement with the rack (as shown in dotted lines, Fig. 4) to permit general release, that is, free travel or movement of the carriage in either direction, and I may employ any means for effecting this result. However, I prefer to utilize one similar to the kind herein illustrated; and, to this end, the escapement-mechanism is disposed preferably upon the transverse rock-shaft *b*², rotatably supported in bearings *b*³, *b*³, on the top-plate *a*⁴. The supporting-block *b*⁴ of said escapement mechanism is provided with a plate *b*⁵ (preferably formed as shown), the front edge of which may be extended to form two laterally-projecting arms *b*⁶, *b*⁶, preferably of the form shown, to facilitate action thereon, as presently to be described, to reduce wear and friction. Arranged in front of the said escapement mechanism B, and preferably upon the top-plate *a*⁴, is a tabulator selecting device *D*^x, of which one member is preferably in the form of a bell-crank lever D, one arm *d* of which extends inward to a position under the parts *b*⁶ of plate *b*⁵; and the other arm *d*² extending vertically, and preferably provided with a thumb-knob *d*³ to facilitate movement of said bell-crank lever. This bell-crank lever D is preferably slidably and rotatably mounted upon a shaft *d*⁴, supported in brackets *d*⁵, *d*^{5x}, secured upon, and projecting forward and downward from, the front edge of the top-plate *a*⁴. One end of said shaft (preferably the right end for convenience) is provided with a thumb-piece or turn-nut *d*⁶ to permit a slight rotation of the shaft in its bearings to effect an adjustment thereof for reasons as will presently appear. One portion of said shaft *d*⁴ is provided with grooves or ridges *d*⁷, preferably extending spirally along the shaft to effect proper register therewith of a spring-finger or spring-actuated pawl, dog, or the like, *d*⁸, constituting a vibrator, disposed upon the interior of a tubular housing or stem *d*⁹ connected with, or formed integral on, the bell-crank lever D, and which has, preferably, a depending lug *d*^{8x} bent at an angle to the length of the finger or vibrator, as shown in Fig. 7, to insure its proper engagement with the grooves *d*⁷.

Arranged on one side of the bell-crank lever D, and free of the shaft *d*⁴, is a latching-device E constituting the other member of the selecting tabulator device *D*^x, provided

with slots *e*, *e*², in which work pins *e*³, *e*⁴, projecting from the side of the bell-crank lever D, the said slots permitting a perpendicular movement of said latching-device E upon the bell-crank lever D. Normally, the pins *e*³, *e*⁴ respectively rest in the lower portions of the slots *e*, *e*², as shown in Figs. 1 and 6. The said latching-device preferably comprises two members *e*⁵, *e*⁶, one at right angles to the other. At the upper portion of the member *e*⁵ is a pin *e*⁷, to which is connected a retractile spring *e*⁸ connecting at its other end with a pin or post *e*⁹, disposed on the member *d*² of the bell-crank lever. The other member *e*⁶ extends in a plane parallel with the member *d* of the bell-crank lever, but is preferably of length less than said bell-crank lever, though of width somewhat greater, so that its upper edge may normally occupy a plane above the upper edge of the member *d*, the slots *e*, *e*² and pins *e*³, *e*⁴, with the cooperation of the retractile spring *e*⁸, permitting this member to occupy said position normally. The particular disposition of member *e*⁶ of the latching device enables this member to constitute the abutment portion of the tabulator device, since it extends sufficiently high to engage the tabulator stops presently to be described, while it is not so long as to be engaged by the lock for lever D, also presently to be described.

Arranged upon the rail *a*³, and preferably in engagement with the rack *a*³, are one or more tabulator-stops F, which may be of any preferred and appropriate form, such as those illustrated in the various figures of the drawings.

Disposed preferably to the rear of the selecting bell-crank lever D is a toothed plate or locking-rack G, having its lower edge provided with teeth or locking-lugs *g*. This locking-rack G is provided with indentations formed with converging walls which produce the teeth or lugs *g*. By reason of the walls of the indentations converging, as stated, the tabulator-device will not only be engaged by said walls, but it will be centered at the point of convergence at the limit of its transverse movement to arresting-position, whereby positive positioning of the carriage is effected and engagement of the escapement-mechanism with the proper tooth in the feed rack is insured, that is to say, the carriage will be arrested at the exact point to permit the dog of the escapement-mechanism to engage in the proper tooth in the rack, rather than the next succeeding tooth, so that the carriage is not permitted to travel to the space beyond that necessary to have the printing effected at the required point. The said plate is supported at its ends by brackets *g*³, *g*² preferably formed integral with the plate and bent to constitute securing projections *g*³, *g*³, in which are formed slots *g*⁴, *g*⁴, which engage pins *g*⁵, *g*⁵, threaded

into the top-plate a^4 , this arrangement affording means for permitting adjustment of said toothed plate G. As will be seen, the member d of the bell-crank lever underlies this toothed plate and normally is out of contact therewith.

On the side of the member d^2 , opposite to the latching-device, extends an indicator-arm d^{10} parallel with the tubular housing d^9 , and preferably marked with graduation or scale marks d^{11} , preferably corresponding in number to the number of figures embraced in the figure-designation of one million, plus those for the spaces between each group of such designations, the decimals, and those for the "cents-designations". This indicator arm extends oppositely from knob d^3 , whereby the hand of the operator in moving the lever does not obstruct the view of the scale. Disposed contiguous to this scale or indicator is a pointer d^{12} , preferably carried on the top-plate a^4 of the carriage. If desired, I may dispense with the indicator-arm d^{10} , and, in lieu thereof, have graduations 9^a on the tubular stem or housing d^9 and dispose a pointer 12^a in juxtaposition thereto, as shown in Fig. 7^a.

In view of their co-action, it is desirable that the indicator or scale and the bell-crank lever selecting device shall both be arranged relatively on the same support, and the tabulator-stop independent thereof—and the two former may be disposed on a stationary support, independent of the traveling carriage, and the stops be arranged on the carriage in position to engage with said selecting-device, when adjusted for positioning the movable member. For column-work, the unit mark on the scale may be used, thus making a combined tabulator and indicating device.

The operation of this device will be apparent: The operator, having previously arranged the series of tabulator-stops F upon the supporting rail a^3 at the desired points for writing up columned or lined pages or sheets, operates the tabulating selecting-lever D first by sliding it laterally on the shaft d^4 , until the pointer d^{12} , carried by the selecting-lever, registers with the proper point or graduation on the indicator-arm d^{10} , the spring pawl d^8 automatically checking though not stopping this selecting movement at the several points corresponding to points of carriage-stopping. The grooves or ridges on the shaft d^4 , already described, correspond (in their relative pitch and position from each other) to the teeth in the feed-rack; that is to say, their measurement is governed by the number and arrangement of the teeth in the feed-rack,—there preferably being, say, ten teeth to the inch, and there would, therefore, be the same relative number of grooves or ridges in the shaft. If a greater or less number of teeth are formed in the feed-rack, the grooves on the shaft, the graduations on the

scale, and the teeth on the locking-bracket G are made to correspond. The grooves or ridges on the shaft d^4 are arranged, also, to correspond to the several graduation-marks on the scale-arm d^{10} , and assist the operator, by means of said vibrator d^8 , as she slides the selecting-lever to stop the member at the desired graduation on the indicator-arm d^{10} , and are made spiral so that said shaft may be given fine adjustment by means of the turn-nut d^6 to true these grooves up perfectly to an exactly-corresponding relation to the graduation-marks on the indicator-arm and to insure the accurate entry of portion d of the tabulator device between the teeth of the locking rack G. The depending lug on the spring-finger or vibrator d^8 rides over the grooves or ridges on the shaft until the pointer and scale register at the desired point.

In the operation of moving the selecting-lever D along the shaft d^4 to select the proper position of the carriage relative to the printing-point, the operator would, preferably, rest her finger or fingers on the bracket d^{5x} , which thus constitutes a support for her hand, to steady the hand and facilitate the selecting. When the selecting-lever D is being operated for this purpose, it has not been pulled forward by the operator, but, having located the point, the operator then pulls the lever forward, and this operation will have tilted the member d into engagement with the portion b^6 of the plate b^5 , which rocks the letter-spacing mechanism out of engagement with the rack, and this permits free movement of the carriage in either direction to facilitate the positioning of the carriage at a predetermined point, which point has been accurately and quickly effected through the selecting-lever, as just described, when moved with relation to the scale-arm d^{10} . It is to be understood that this operation has positioned the carriage as many spaces in advance of the last numeral in a group of figures as there are numerals and separating marks in that group. In other words, when the operator desires to write, say, "7654.32" for any particular column, she first moves the selecting-lever until the pointer d^{12} indicates on the scale-arm d^{10} the line for printing the "7". Then she pulls on the selecting lever and thus rocks the escapement mechanism out of engagement, as already described, which puts the carriage under the action of the tape b , tending to draw the same in one direction. At the same time, the member d has been caused to engage the teeth in the rack-plate G, whereby said selecting-lever temporarily becomes locked therewith, so long as pressure is placed on the selecting-lever. This interlocks the parts and enables the operator to shift the carriage freely, because the escapement mechanism has been disengaged from its rack by means of the selecting-lever (which, for the purpose, has

been utilized as a general release lever). The locking of said selecting-lever in the rack-plate G is desirable to enable the operator to move and control the carriage under the action of the carriage moving tape b , by the selecting-lever without having to take hold of any other parts of the machine. This position, namely with the lever D tilted into locking engagement with rack-plate G, I call the arresting position of the tabulator device D^x , since at this position its abutment portion is disposed to engage with the tabulator stops F. Then the carriage is moved until the latching-device E is brought into contact with the tabulator-stop F, which has been arranged, say, in a position to correspond with a particular vertical line on the page, or at a point just beyond that at which the last figure or character of a group will be struck. In the number already referred to, namely, "7654.32", the "7" would be six spaces, say, from the last figure "2". Now, as already described, when the latching-device is brought against the tabulator-stop, the carriage is in a position for its printing mechanism to print the "7". The proper positioning of the carriage having thus been effected, the selecting-device is released to permit the escapement mechanism to reengage the rack, and then the operator strikes the proper keys to print, first, the "7", and then the remaining figures of the group. The carriage will, therefore, through the medium of the selecting-device, have been properly positioned so as to print this group to bring the last figure "2" inside of the column-lining. The same operation of first selecting on the scale d^{10} ; then general release of the carriage, and bringing the latching-device up against a tabulator-stop, and, finally, releasing the hold on the selecting device and striking the keys, occurs for each column. Now, when it is desired to return the carriage to its starting point, that is, to a position to the left of the tabulator-stop, the operator disengages the escapement mechanism B, and, when the latching-device strikes against the tabulator-stop, it rides over the beveled portion f of said stop, and will yield by moving downward, the slots therein, above described, permitting this operation. The retractile spring e^8 then returns the latching-device to normal position.

Since the latching device operates during the reverse movement of the carriage, I have called it a reversely-operating device. The value of locking lever D against sliding movement on its shaft when the tabulator device occupies arresting position will now be apparent, since, by reason of being thus rigidly locked while it holds the escapement mechanism out of engagement with the spacing rack, it affords manual operating means for effecting carriage-shifting; and the latching device permits free reverse movement of

the carriage past the tabulator stops, in spite of the fact that the tabulator device is occupying arresting position during this movement.

In Fig. 15, I have shown a somewhat different construction of the device for effecting the disengagement of the escapement-mechanism from its rack: In lieu of the plate b^5 for engaging the selecting-device, I employ the following elements: Secured to the rock-shaft b^2 is a crank-arm h , and pivotally connected with this is a link h^2 , which is pivotally connected, at its other end, to another crank-arm h^3 secured rigidly to shaft h^4 supported parallel to the rock-shaft b^2 in brackets h^5 , h^5 . Rigidly secured upon said rock-shaft is a rectangular frame h^6 , of width corresponding approximately to the locking plate G already described. Now, when the selecting-lever is moved to tilt the member d thereof, this member engages and raises said frame, which transmits motion to the rock-shaft h^4 , and this, in turn, through the connecting crank arms h^3 , the link h^2 , and the crank arm h , rocks the rock-shaft b^2 , and throws the escapement mechanism out of engagement. In this same Fig. 15 and, in detail, in Fig. 8, I have shown a somewhat modified form of a portion of the selecting device: In lieu of disposing the spring-finger i inside of the tubular-stem or housing i^2 , I arrange it exteriorly thereof, and secure it in position by a screw i^3 . Its free end is provided with a depending V-shaped portion i^4 , which projects through an opening i^5 in the stem i^2 and engages grooves, incuts, teeth or ridges i^6 on the shaft. In this form, also, the shaft on which the tabulator operating-lever slides is not rotatable for adjustment; but such adjustment is effected by means of the adjusting screws i^7 which move the shaft longitudinally in its bearings i^8 . In this modified form of device, I may, of course, employ the latching-device E on the selecting lever, the same as upon the construction already described, or I may omit it therefrom, as I can, also, in the described construction; and, in lieu thereof, employ a tabulator-stop provided with a latching-pawl of any described form. In this construction, bell-crank lever D constitutes a simple bell-crank tabulator device, in contradistinction to which the tabulator device D^x may be termed a compound bell-crank member.

In Figs. 9, 10, and 11, I have shown the stop F provided with the latching-pawl J, and comprising a body-plate j , through an opening j^2 in which extends the shank of a locking-device j^3 , having at one end a thumb-knob j^4 , and at the other a semi-circular cam-disk j^5 designed to engage the supporting track rail a^3 . Depending from the plate j is a rearward-extending rectangular plate j^6 , provided at its upper edge with a T-shaped portion j^7 . It is to be understood that the

cam-disk is operated to cause its round or curved portion to engage the bottom wall of a groove or cut portion a^6 in the rail a^3 , the plate j^6 engaging the teeth a^5 in said member
 5 and the T-shaped portion engaging the rear side of said member to prevent play and disengagement of the stop after once being secured in position. When the thumb-nut is turned to bring the flat portion of the cam-disk in alinement with the walls of the
 10 groove, the plate j^6 is lowered out of engagement with the teeth a^5 , and T-shaped portion j^7 is sufficiently lowered to clear the rack teeth in order to permit the device being
 15 slipped off the rack. This stop is preferably adjustable on its support, so that its position can be changed at will. Depending from the body-plate j is a dog or pawl J having
 a depending portion j^8 , pivoted at j^9 , and
 20 working in one direction against a pin or stud j^{10} on the body plate j to limit its movement. A spring j^{11} holds the dog normally in engagement with the stud j^{10} . In lieu of the pivoted pawl or dog, just described, I may
 25 provide the lower portion of the body-plate, as in Figs. 12 and 13, with a bore j^{12} , in which would work a plunger j^{13} carrying a pin j^{14} working in a slot j^{15} in the body-plate, as shown in Figs. 12 and 13. The lower end of
 30 the plunger would preferably have a beveled face j^{16} on one side. To hold the plunger normally projected, a spring j^{17} is arranged in the bore and bears against the upper end of said plunger. It is to be understood that,
 35 when the member d of the bell-crank lever engages the dog J, or the beveled plunger j^{13} on one side, it will prevent further movement of the carriage from left to right until the said member d is thrown out of such engage-
 40 ment. When the carriage is being returned to the starting position, however, said member will, upon striking said dog J, rock it and pass over the same (and, in the case of the beveled plunger j^{13} , force the same back into
 45 the bore), and the spring, in both instances, would return the movable part (dog or plunger) to normal position.

In case the employment of the latching feature of the tabulator is not desired, the
 50 form of stop illustrated in Fig. 14 may be used. This form of stop is without bevel or latching device and would be employed in connection with the simple form of tabulator device shown in Figs. 11 and 15. It is
 55 obvious that the form of stop shown in Fig. 14 may be utilized with advantage as a left-hand stop for arresting the carriage at any desired limit of reverse movement.

It is to be understood that this invention is
 60 also applicable to other forms of writing machines than that herein illustrated, and, as well, to the round-platen style of typewriters. In the latter class of machines, I would prefer to arrange the tabulating-device, above de-
 65 scribed, upon a stationary part of the ma-

chine, and the tabulator-stops, with their supporting-rack, upon a movable part, the said tabulating-device being arranged to have a connection with the general-release device of the machine.

It is to be understood that, with this device, applied and operated as already described, the usual shock and jar to the machine, occasioned by the sudden arresting of the carriage upon striking the tabulator-stop
 75 under full action of the power spring or driving-device is entirely obviated, as the operator has absolute control of the carriage, and can move the same up to the stop easily and gently. When the bell-crank lever has been
 80 moved first to effect the proper selection of a point on the scale-arm, and then is operated to effect general release of the escapement mechanism, and simultaneously engage with the locking rack-plate G, these
 85 various parts are all interlocked, so to speak, and can be moved together at the will of the operator, quickly and gently.

It is to be understood that this device is applicable for doing column-work other than
 90 merely figures; as, for instance, for writing names, the addresses, and various other information of parties, in individual columns. When the device is used in this way, the tabulator-stop would be placed at the proper
 95 point for the commencement of the word or line. Then, by simply operating the selecting-lever until its unit-designation is positioned opposite the pointer, the carriage would be stopped at the proper place to
 100 commence the word or line.

Having thus described my invention, what I claim and desire to secure by United States Letters Patent is—

1. In a typewriter, the combination with
 105 a laterally traveling carriage and escapement mechanism, of a tabulator stop, and a co-acting laterally and vertically shiftable tabulator device, comprising a horizontally extending portion adapted to release the es-
 110 capement and a vertically extending portion forming an operating handle for effecting the lateral shifting and subsequently the vertical shifting of said device to cause the horizon-
 115 tally extending portion to release the carriage, and to occupy an engaging position in relation to the tabulator stop.

2. In a typewriter, the combination with
 a laterally traveling carriage and escape-
 120 ment mechanism, of a tabulator stop, and a co-acting tiltable and laterally shiftable tabulator device, comprising a horizontally extending portion adapted to release the es-
 125 capement and a vertically extending portion forming an operating handle for effecting the lateral shifting and subsequently tilting said device to cause the horizontally
 130 extending portion to release the carriage, and to occupy an engaging position in relation to the tabulator stop.

3. In a typewriter, the combination with a laterally traveling carriage and escapement mechanism, of a tabulator stop and a co-acting tiltable and laterally shiftable tabulator device releasably associated with the escapement mechanism and comprising a horizontally extending portion and a vertically extending portion, the latter constituting an operating handle for effecting such lateral shifting and subsequently tilting the tabulator device to release the escapement mechanism and to cause said horizontally extending portion to occupy arresting position with reference to the stop.
4. In a typewriter, the combination with a traveling-carriage and escapement-mechanism, of a tabulator-stop, and a co-acting tiltable and laterally-shiftable two-armed angular tabulator-member pivoted in close proximity to the vertex of its angle and having one arm releasably-associated with the escapement-mechanism and the other arm constituted as an operating-handle for effecting lateral shifting and controlling of the free travel of the carriage and, subsequently, for tilting the tabulator-device to cause said first-named arm to effect carriage-release and to cooperate with, and occupy arresting position with reference to, the stop.
5. In a typewriter, the combination with a laterally traveling carriage, and escapement mechanism, of a tabulator stop and a co-acting tiltable and laterally shiftable tabulator device mounted on said carriage and comprising a horizontally extending portion releasably associated with the escapement mechanism and a vertically extending portion constituting an operating handle for effecting such lateral shifting and subsequently tilting the tabulator device to cause said horizontally extending portion to bring about the carriage release and to occupy arresting position with reference to the stop.
6. In a typewriter, the combination with a laterally traveling carriage and a carriage support and escapement mechanism, of a tabulator stop and a co-acting tiltable and laterally shiftable tabulator device, each mounted at the front of one of the two first-named members, said tabulator device comprising a rearward extending portion releasably associated with the escapement mechanism and a vertically extending portion constituting an operating handle for effecting such lateral shifting and subsequently tilting the tabulator device to cause said rearward extending portion to bring about carriage release and to occupy arresting position with reference to the stop.
7. In a typewriter, the combination with a laterally traveling carriage, a carriage-support, and escapement mechanism, of a series of tabulator stops mounted on the front of said support, and a co-acting tiltable and laterally shiftable tabulator device mounted on the front of the carriage, and comprising a rearward extending portion releasably associated with the escapement mechanism and a vertically extending portion constituting an operating handle for effecting such lateral shifting and also tilting the tabulator device to cause said rearward extending portion to bring about carriage release and to occupy arresting position with reference to one or other of the tabulator stops.
8. In a typewriter, the combination with a laterally traveling carriage, a carriage support, a feed rack mounted on said support, and feeding dogs mounted on the carriage, of a series of tabulator stops mounted on the front of the carriage support, and a co-acting tiltable and laterally shiftable tabulator device mounted on the front of the carriage, and comprising a rearward extending portion connected with the escapement dogs and a vertically extending portion constituting an operating handle for effecting such lateral shifting and also tilting the tabulator device to cause said rearward extending portion to remove the escapement dogs from engagement with the rack and to occupy arresting position with reference to one or other of the tabulator stops.
9. In a typewriter, the combination with a carriage and a carriage support, of a tabulator stop and a co-acting tiltable and laterally shiftable tabulator device each mounted at the front of one of the two first-named members, said tabulator device comprising a rearward extending portion associated with the carriage-release mechanism and a vertically extending portion constituting an operating handle for effecting such lateral shifting and also tilting the tabulator device to cause said rearward extending portion to bring about carriage release and to occupy arresting position with reference to the tabulator stop, and of a locking rack provided with teeth disposed to engage said rearward extending portion when tilted and to lock the tabulator device against lateral movement.
10. In a typewriter, the combination with a laterally traveling carriage, a carriage support, a feeding rack mounted on said support, and spacing dogs mounted on the carriage, of a series of tabulator stops mounted on the front of the carriage support, a co-acting tiltable and laterally shiftable tabulator device mounted on the front of the carriage, and comprising a rearward extending portion connected with the spacing dogs and a vertically extending portion constituting an operating handle for effecting such lateral shifting and also tilting the tabulator device to cause said rearward extending portion to disengage the spacing dogs from the rack and to occupy arresting position with reference to one or other of the tabulator stops, and of a locking rack mounted on the carriage between said dogs and the series of tab-

ulator stops in position to receive said rearward extending portion, when tilted, to prevent lateral movement thereof.

11. In a typewriter, the combination with
5 a traveling carriage, and a tabulator stop of a co-acting tiltable and laterally shiftable angular tabulator member pivoted in close proximity to the vertex of its angle and having one arm normally horizontal and releasingly associated with the carriage-release mechanism and adapted to cooperate arrestingly with the said stop and the other arm normally vertical and constituting an operating handle for effecting lateral shifting and
10 controlling of the free travel of the carriage, and subsequently for tilting the tabulator device to cause the first-named arm to bring about carriage release and to occupy arresting position with reference to the tabulator stop.
20

12. In a typewriter, the combination with a carriage and escapement mechanism; of a tabulator stop, a horizontal shaft member, and a tiltable and laterally shiftable tabulator device having a portion extending horizontally into releasing association with the escapement mechanism and an upward extending portion affording manual means for moving said tabulator device parallel to the shaft axis to select the desired point of carriage stopping and rotatable about said axis to cause said horizontally extending portion to occupy arresting position with reference to the tabulator stop and to effect carriage
30 release.
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13. In a typewriter, the combination with a carriage, a feed rack, and escapement dogs tiltable out of engagement with the rack; of a tabulator stop, a horizontal shaft member, and a tiltable and laterally shiftable tabulator device having a portion extending horizontally toward said escapement dogs and an upward extending portion affording manual means for moving the tabulator device parallel to the shaft-axis to select the desired point of carriage stopping and rotatable about said axis to cause said horizontally extending portion to tilt the escapement dogs and to occupy arresting position.
45

14. In a typewriter, the combination with a carriage and escapement mechanism; of a shaft having depressed and elevated regions corresponding with points of carriage stopping, a tabulator device slidably and rotatably mounted on said shaft and releasingly associated with the escapement mechanism, manual means for moving said device slidingly to select the desired point of carriage stopping and rotatable to effect carriage release and to occupy arresting position, and a spring pawl carried by the tabulator device and disposed to engage yieldingly and automatically with the depressed portions of the shaft.
60

15. In a typewriter, the combination with

a carriage and escapement mechanism; of a shaft provided with a depressed spiral having a pitch corresponding to distances between points of carriage stopping, a tabulator device slidably and rotatably supported
70 on said shaft and releasingly associated with the escapement mechanism, manual means for moving said device slidably to select the desired point of carriage stopping and rotatable to effect carriage release and to occupy
75 arresting position, and a spring pawl carried by the tabulator device and disposed to engage yieldingly and automatically with the depressed spiral.

16. In a typewriter, the combination with
80 a carriage and escapement mechanism; of a tabulator device releasingly associated with the escapement mechanism and successively movable to select the desired point of carriage stopping and to effect carriage release,
85 means for automatically checking the selective movement of the tabulator device at the several points representing points of carriage stopping, and means for permitting fine adjustment of said means.
90

17. In a typewriter, the combination with a carriage and escapement mechanism; of a shaft mounted for fine adjustment and having depressed and elevated regions corresponding to points of carriage stopping, a
95 tabulator device slidably and rotatably supported on said shaft and releasingly associated with the escapement mechanism, manual means for moving said device slidingly to select the desired point of carriage stopping
100 and rotatably to effect carriage release, and a spring pawl carried by the tabulator device and disposed to engage yieldingly and automatically with the depressed portions of the shaft.
105

18. In a typewriter, the combination with a carriage and escapement mechanism; of a shaft mounted for fine adjustment rotatably and provided with a depressed spiral having
110 a pitch corresponding to distances between points of carriage stopping, a tabulator device rotatably and slidably supported on said shaft and releasingly associated with the escapement mechanism, manual means for moving said device slidably to select the
115 desired point of carriage stopping and rotatably to effect carriage release and to occupy arresting position, and a spring pawl carried by the tabulator device and disposed to engage yieldingly and automatically with the depressed spiral.
120

19. In a typewriter, the combination with a carriage and escapement mechanism; of a horizontal shaft, a right-angled tabulator device slidably and rotatably mounted on said
125 shaft, one portion of said member extending horizontally into releasing association with the escapement mechanism and the other portion extending upward and affording manual operating means for sliding the tabu-
130

lator device to select the desired point of carriage stopping and rotating the device to bring about carriage release and to occupy arresting position, a scale extending from the upward extending portion parallel to the shaft, and a pointer cooperating with the scale.

20. In a typewriter, the combination with a carriage and escapement mechanism; of a pointer, a horizontal shaft, a tabulator device having horizontally and upward extending portions and being slidable on said shaft to select the desired point of carriage stopping and rotatable to cause the horizontally extending portion to release the escapement mechanism and to occupy arresting position, a scale projecting from the upward extending portion parallel to the shaft and cooperating with the pointer, and an operating knob extending oppositely from the scale.

21. In a typewriter, the combination with a carriage and escapement mechanism; of a horizontal shaft member, a tabulator device having a horizontally extending portion releasably associated with the escapement mechanism and an upward extending portion affording manual means for moving the tabulator device parallel to the shaft axis to select the desired point of carriage stopping and rotatably about said axis to effect carriage release and to occupy arresting position, and a rack provided with teeth disposed to receive and lock said horizontally extending portion during carriage release.

22. In a typewriter, the combination with a carriage and escapement mechanism; of a tabulator stop, a tabulator device having a horizontally extending portion and a vertically extending operating portion, said device being slidable parallel to the path of carriage movement to select the desired point of carriage stopping and rotatable transversely of said path to cause the horizontally extending portion to assume arresting position and to effect release of the escapement mechanism, and of means for locking the tabulator device in selected position during carriage release thereby.

23. In a typewriter, the combination with a carriage and escapement mechanism; of a shaft disposed at the front of the carriage parallel to its path of travel, a tabulator stop mounted independently of the carriage, a tabulator device slidable parallel to the shaft axis to select the desired point of carriage stopping and rotatable about said axis to occupy arresting position and to effect release of the escapement mechanism, a reversely operating latching device associated with the tabulator members, means for locking the tabulator device in selected position during carriage release thereby, and manual tabulator-operating and carriage-shifting means carried by said tabulator device.

24. In a typewriter, the combination with

a carriage and escapement mechanism, of a tabulator stop mounted independently of the carriage, and a co-acting tabulator device shiftable on the carriage parallel to the path of the carriage travel for selecting the desired point of carriage stopping and comprising a bell-crank lever, one arm thereof extending into releasing association with the escapement mechanism and the other arm affording an operating handle, and a sliding abutment element carried by the first-named arm and constructed, when said bell-crank lever is tilted, to engage arrestingly with the tabulator stop during free movement of the carriage in the direction of letter spacing and to latch by said stop during movement of the carriage in the opposite direction.

25. In a typewriter, the combination with a carriage and escapement mechanism, of a tabulator stop mounted independently of the carriage, and a co-acting tabulator device shiftable on the carriage parallel to the path of carriage movement for selecting the desired point of carriage stopping and comprising a bell-crank lever, one arm thereof extending into releasing association with the escapement mechanism and the other arm affording an operating handle, and a sliding angulated abutment plate carried by the bell-crank lever and constructed, when said bell-crank lever is tilted, to engage arrestingly with the tabulator stop during free movement of the carriage in the direction of letter spacing and to latch by said stop during movement of the carriage in the opposite direction.

26. In a typewriter, the combination with a carriage and escapement mechanism, of a tabulator stop mounted independently of the carriage, and a co-acting tabulator device shiftable on the carriage parallel to the path of carriage movement for selecting the desired point of carriage stopping and comprising a bell-crank lever, one arm thereof extending into releasing association with the escapement mechanism and the other arm affording an operating handle, a sliding abutment carried by the bell-crank lever and constructed, when said lever is tilted to engage arrestingly with the tabulator stop during free movement of the carriage in the direction of line spacing and to latch by said stop during movement of the carriage in the opposite direction, means for limiting the sliding movement of said abutment element, and means for returning the element to normal position after the latching action.

27. In a typewriter, the combination with a carriage, a spacing rack, and escapement dogs cooperating therewith; of a tabulator stop independent of the carriage, a bell-crank lever mounted on the carriage and having one arm extending rearward in a plane beneath said stop into releasing association

with the escapement dogs and the other arm disposed upright to afford manual tabulator-operating means, said lever being slidable longitudinally of the carriage to select the desired point of carriage stopping and rotatable to remove the escapement dogs from engagement with the rack and itself to occupy arresting position, and a spring controlled latching device carried by the bell-crank lever and normally projecting above the horizontal arm thereof for engagement with the tabulator stop.

28. In a typewriter, the combination with a laterally traveling carriage, escapement-mechanism and a rack cooperating therewith, of a tabulator stop, a co-acting tabulator device mounted on the carriage, laterally shiftable to select the desired point of carriage stopping and transversely movable to occupy arresting position with reference to the stop, locking means disposed in the path of transverse movement of the tabulator-device and positioned to engage with the tabulator device when in arresting position to prevent lateral shifting and comprising a member having indentations formed with converging walls to engage and center the tabulator device at the limit of its transverse movement to arresting position whereby positive positioning of the carriage is effected and engagement of the escapement-mechanism with the proper operative part of its cooperating rack is insured, and a reversely operating vertically slidable latching device associated with the tabulator members.

29. In a typewriter, the combination with a laterally traveling carriage, escapement-mechanism and a rack cooperating therewith, of a tabulator stop, a co-acting tabulator device laterally shiftable on said carriage to select the desired point of carriage stopping and transversely movable to occupy arresting position, said device including manual tabulator operating and carriage shifting means, a locking device disposed in the path of transverse movement of the tabulator-device and arranged to prevent lateral shifting of the tabulator device when in arresting position and comprising a member having indentations formed with converging walls to engage and center the tabulator device at the limit of its transverse movement to arresting position whereby positive positioning of the carriage is effected and engagement of the escapement-mechanism with the proper operative part of its cooperating rack is insured, and a reversely operating vertically slidable latching device associated with the tabulator members.

30. In a typewriter, the combination with a laterally traveling carriage and escapement mechanism and a rack disposed in cooperating position, of a tabulator stop, a co-acting tabulator device laterally shiftable on

said carriage to select the desired point of carriage-stopping and transversely movable to occupy arresting position, and to release the escapement, said tabulator device including manual tabulator operating and carriage shifting means, a locking device disposed in the path of transverse movement of the tabulator-device and arranged to prevent lateral shifting of the tabulator device when in arresting position and comprising a member having indentations formed with converging walls to engage and center the tabulator-device at the limit of its transverse movement to arresting position whereby positive positioning of the carriage is effected and engagement of the escapement-mechanism with the proper operative part of its cooperating rack is insured, and a reversely operating vertically slidable latching device associated with the tabulator members.

31. In a typewriter, the combination with a traveling carriage and escapement, of a tabulator-stop, a co-acting tabulator device releasably associated with the escapement and adapted by one movement to effect release thereof and to occupy arresting position with reference to the stop, said tabulator members including a vertically slidable latching device constructed to permit free reverse movement of the members past each other when the tabulator device is in arresting position, means for adjusting said tabulator-device longitudinally, and independent A-shaped means for locking it in position at the limit of its movement to arresting position.

32. In a typewriter, the combination with a traveling carriage and escapement, of a tabulator device releasably associated with the escapement mechanism and adapted by one movement to effect release thereof and to occupy arresting position, and a plurality of shiftable tabulator stops adapted to enable the tabulator device to bring the carriage to rest at successive points throughout the entire travel of the carriage, said tabulator members including a vertically slidable latching device constructed to permit free reverse movement of the members past each other when the tabulator device is in arresting position, means for adjusting said tabulator-device longitudinally, and independent A-shaped means for locking it in position at the limit of its movement toward arresting position.

33. In a typewriter, the combination with a laterally traveling carriage, and an escapement, of a tabulator device releasably associated with the escapement and adapted to have a plurality of operating movements, first, to be shifted laterally to select the particular point of carriage-stopping and transversely to effect release of the escapement and to occupy arresting position, indented

means for locking said tabulator-device against lateral movement at the limit of its transverse movement toward arresting position, and a plurality of tabulator stops adapted to permit the tabulator device to bring the carriage to rest at successive points throughout the entire travel of the carriage, said tabulator members including a vertically slidable latching device constructed to permit free reverse movement of the members past each other when the tabulator device is in arresting position, the tabulator-stop being normally in the path of the arresting position of the tabulator-device, and the tabulator-device being constructed to operate, when actuated to release the carriage, and thereby place said carriage under the control, in either direction of its transverse travel, of the operator.

34. In a typewriter, the combination with a laterally traveling carriage and an escapement, of a tabulator device mounted on the carriage in releasing association with the escapement and adapted to have two successive movements, first, to be shifted laterally to select the particular point of carriage-stopping and transversely to effect release of the escapement and to occupy arresting position, and a rack-member for locking said tabulator-device against lateral movement at the limit of its transverse movement toward arresting position, and a plurality of tabulator stops mounted independent of the carriage and adapted to permit the tabulator device to bring the carriage to rest at successive points throughout the entire carriage-travel, said tabulator members including a vertically slidable latching device constructed to permit free reverse movement of the members past each other when the tabulator device is in arresting position, the tabulator-stop being normally in the path of the arresting position of the tabulator-device, and the tabulator-device being constructed to operate, when actuated to release the carriage, and thereby place said carriage under the control, in either direction of its transverse travel, of the operator.

35. In a typewriter, the combination with a laterally traveling carriage and an escapement, of a tabulator device mounted on the carriage in releasing association with the escapement and adapted to be shifted laterally to select the particular point of carriage-stopping and transversely to effect release of the escapement and to occupy arresting position, and a rack-member for locking said tabulator-device against lateral movement at the limit of its transverse movement toward arresting position, and a plurality of tabulator stops mounted independent of the carriage and adapted to enable the tabulator device to bring the carriage to rest at successive points throughout its entire travel, said tabulator device including a vertically

slidable latching device and being shiftable parallel with the direction of travel of the carriage and, whatever its position, constructed to permit free reverse movement of the members past each other when the tabulator device is in arresting position, the tabulator-stop being normally in the path of the arresting position of the tabulator-device, and the tabulator-device being constructed to operate, when actuated to release the carriage, and thereby place said carriage under the control, in either direction of its transverse travel, of the operator.

36. In a typewriter, the combination with a laterally traveling carriage and an escapement, of a tabulator device mounted on the carriage in releasing association with the escapement and adapted to be shifted laterally to select the particular point of carriage-stopping and transversely to effect release of the escapement and to occupy arresting position, a rack-member for locking said tabulator device against lateral movement at the limit of its transverse movement toward arresting position, a plurality of tabulator stops mounted independent of the carriage and adapted to enable the tabulator device to bring the carriage to rest at successive points throughout the entire carriage travel, and a lock for securing the tabulator against lateral shifting when in arresting position and disposed in position, relative to the tabulator-device, to be engaged by the same when actuated to occupy arresting-position, said tabulator device including a vertically slidable latching device constructed to permit free reverse movement of the tabulator members past each other when the tabulator device is in arresting position, the tabulator-stop being normally in the path of the arresting position of the tabulator-device, and the tabulator-device being constructed to operate, when actuated to release the carriage, and thereby place said carriage under the control, in either direction of its transverse travel, of the operator.

37. In a typewriter, the combination with a laterally traveling carriage and an escapement, of a tabulator device mounted on the carriage and adapted to be shifted laterally to select the particular point of carriage-stopping and transversely to effect release of the escapement and to occupy arresting position, a locking-rack, having Λ -shaped indentations for securing the tabulator device against lateral shifting when in arresting position, and a plurality of tabulator stops mounted independent of the carriage and adapted to bring the carriage to rest at successive points throughout the entire carriage-travel, said tabulator device including a manual operating handle and a vertically slidable latching device constructed to permit free reverse movement of the tabulator members past each other when the tabulator

device is in arresting position, the tabulator-stop being normally in the path of the arresting position of the tabulator-device, and the tabulator-device being constructed to operate, when actuated to release the carriage, and thereby place said carriage under the control, in either direction of its transverse travel, of the operator.

38. In a typewriter, the combination with a carriage and its escapement mechanism, of a shaft having depressed and elevated regions corresponding with points of carriage-stopping, a tabulator-device slidingly and rotatably mounted on said shaft and releasingly associated with the escapement mechanism, manual means for moving said device slidingly to select the desired point of carriage-stopping and rotatable to effect carriage-release and to occupy arresting position, and an engaging member carried by the tabulator-device and disposed to contact automatically with the depressed portion of said shaft.

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

GEORGE W. DONNING.

Witnesses:

M. P. CHATTIN,
J. R. WILTSIE.