

1,062,265.

C. B. YAW.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 23, 1912.

Patented May 20, 1913.

2 SHEETS-SHEET 1.

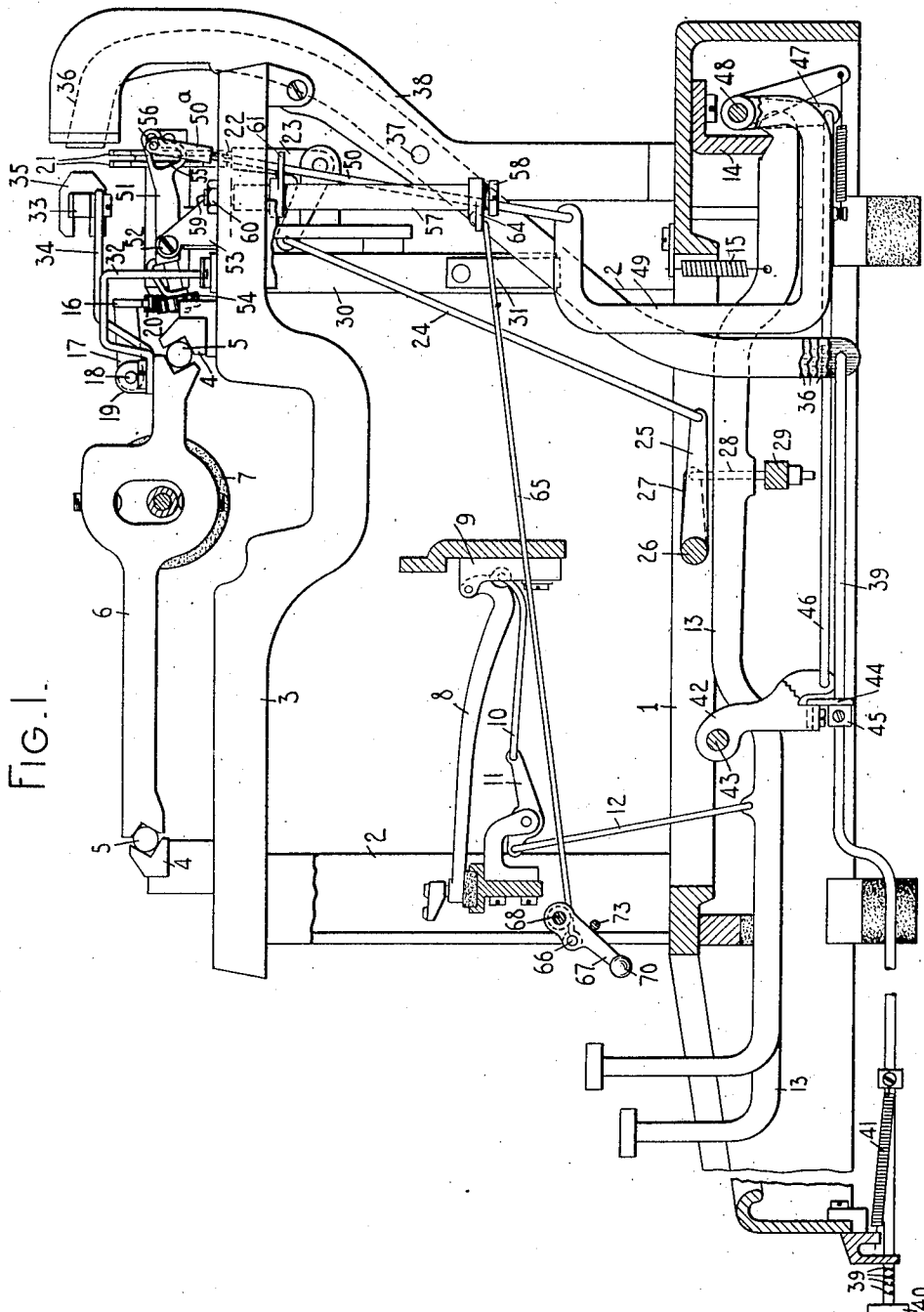


FIG. 1.

WITNESSES:

M. F. Hammer
M. W. Pool

INVENTOR:

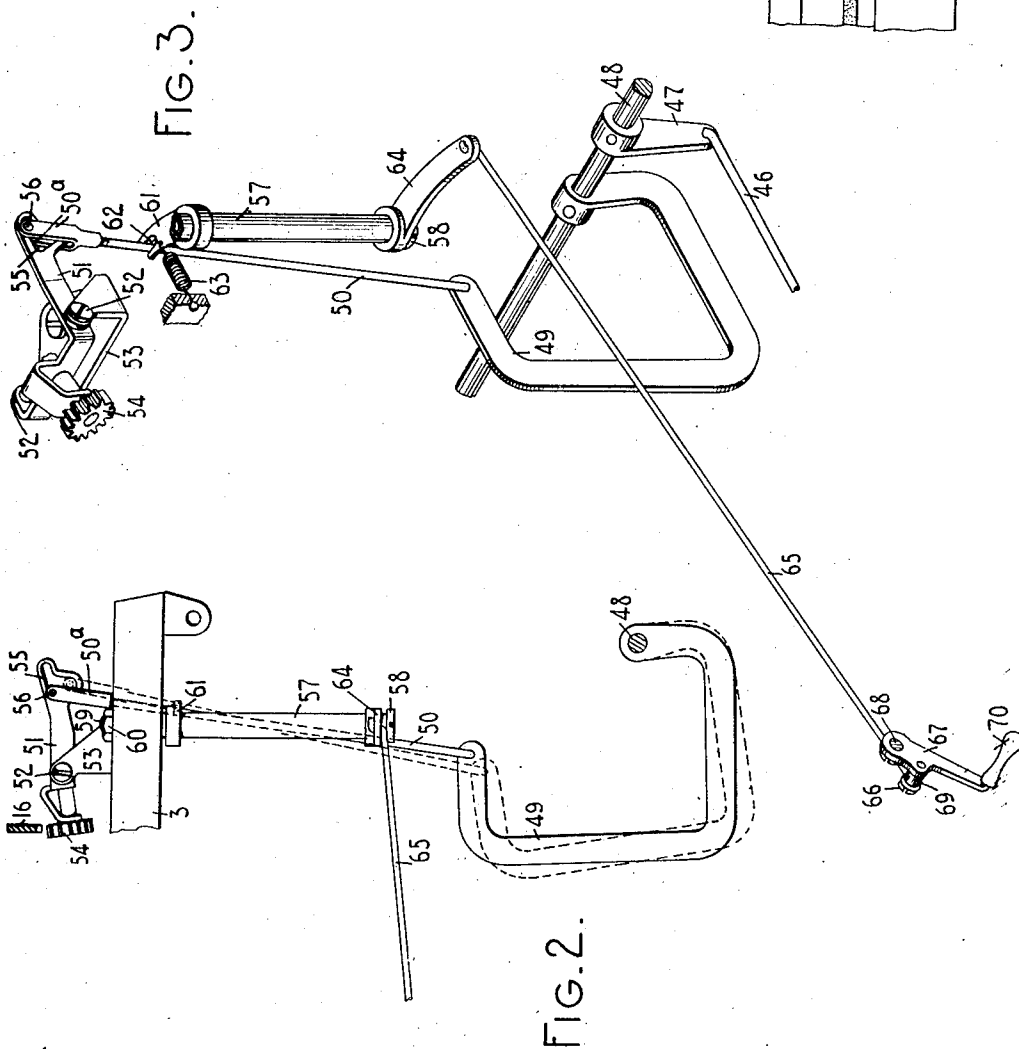
C. B. Yaw
By Jacob F. Felt
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2 SHEETS—SHEET 2.



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M. F. Hammer

M. W. Pool

INVENTOR:

Clio B. Yaw

By Jacob F. Felt

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

CLIO B. YAW, OF ARLINGTON, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
REMINGTON TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF
NEW YORK.

TYPE-WRITING MACHINE.

1,062,265.

Specification of Letters Patent.

Patented May 20, 1913.

Application filed December 23, 1912. Serial No. 738,235.

To all whom it may concern:

Be it known that I, CLIO B. YAW, a citizen of the United States, and resident of Arlington, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to tabulating mechanism for typewriting machines and its general object is to provide improved mechanism of the character specified.

More specifically stated the object of my present invention is to provide a reversible tabulating mechanism which may be employed in the usual way for advancing the carriage to predetermined points in its leftward travel and is also adaptable for tabulating in the opposite direction whenever tabulating of this character commonly called reverse tabulating is more suited to the work in hand.

To the above and other ends my invention consists in the features of construction, combinations of devices and arrangements of parts hereinafter described and particularly pointed out in the claims.

In carrying out my invention in the present instance I have applied it to a No. 11 Remington typewriting machine, and to the denominational tabulating mechanism commonly employed with said machine, although it is to be understood that said invention may be applied readily to other styles of writing machines and to other constructions of tabulating mechanism, denominational or otherwise. In the regular tabulator of the Remington machine, and indeed in most denominational tabulators, each tabulator key is adapted to project a denominational stop into the path of the column stops and also to operate the release mechanism, releasing the carriage and permitting it to be drawn leftward under the pull of the carriage motor until arrested by the co-acting stops at a predetermined point. In the present instance the releasing mechanism comprises an actuating link which connects a universal rock shaft, operative by the tabulator key connections, with a releasing lever provided with a pinion for releasing the carriage feed rack. I provide means comprising a train of mechanism under the control of a key or finger piece for

at will shifting the link so as to break the connection between said rock shaft and said releasing lever and render the releasing mechanism ineffective when the tabulator keys are actuated. The result will be that a tabulator key may at this time be actuated to project its stop without affecting the carriage which may then be pushed or impelled backward or to the right by hand until arrested in the position in part determined by the projected stop. This method of tabulating is particularly adapted for use in what is usually termed in commercial typewriting "listing," and is, for example, preferably employed in connection with a tally roll mechanism of the character disclosed in my pending application, Serial No. 746,303, filed February 5, 1913.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a No. 11 Remington typewriting machine embodying my invention, parts of the machine which are not necessary to an understanding of said invention being omitted. Fig. 2 is a skeletonized side elevation of the carriage releasing devices and switching mechanism shown in a different relationship from that illustrated in Fig. 1. Fig. 3 is a perspective view of the switching mechanism and carriage releasing devices. Fig. 4 is a fragmentary front elevation showing the construction and mounting of the finger piece or key of the switching mechanism.

As shown in Fig. 1 the frame of the machine comprising a base 1, posts 2 and a top plate 3 supports fixed track-ways 4 which through anti-friction balls 5 support a carriage 6 on which is mounted a platen 7. Co-operative with the front face of the platen are type bars 8 each mounted on a stationary hanger 9 and connected through a train of devices comprising a link 10, lever 11 and a second link 12 with a key lever 13, the key levers being fulcrumed on a stationary bar 14 and being each provided with a restoring spring 15. A releasable feed rack 16 is secured to arms 17 fulcrumed at 18 on ears 19 fixed to the rear of the carriage. Said feed rack normally meshes with a feed pinion 20 operatively connected with a pair of toothed escapement wheels 21 with which co-operates a dog 22 mounted on a dog rocker 23 connected by a link 24 with a crank arm 25 extending rearward from

about the middle of a rock shaft 26. Near its ends the rock shaft is provided with rearwardly extending crank arms 27 from which depend arms or links 28 supporting a universal bar 29 which underlies the key levers 13 and is operative thereby to actuate the dog 22 and operate the escapement devices to permit step-by-step letter feed movements of the carriage under the pull of a motor or spring drum 30 which is connected by a strap 31 with an arm 32 fixed to the carriage.

The parts thus far described are common to the No. 11 Remington machine. The tabulating mechanism usually employed in connection with said Remington machine comprises a toothed stop bar 33 mounted on arms 34 fixed to and extending rearward from the carriage, said bar being adapted to receive adjustable tabulator or column stops 35 with which cooperate a set of denominational stop levers 36 pivoted at 37 on a frame 38 secured to the main frame of the machine. The lower ends of said levers 36 are each provided with a key connection comprising a push rod 39 having at its front end a tabulator key 40 operative to project the stop proper at the upper end of the associate lever 36 forward into the path of the column stops 35. Restoring springs 41 restore the stop levers and their key connections when released to normal position. The tabulator keys are adapted also to actuate carriage release devices comprising a bail 42 having a stationary pivot 43. Secured to the cross bar of the bail is a slotted release bar 44 which is operative by collars 45 fixed to the push rods 39 to swing the bail rearward and cause links 46 connected thereto to actuate crank arms 47 depending from a universal rock shaft 48 to which is fixed an angular lever member 49 which is connected by an actuating link 50 with the releasing lever.

The train of releasing devices heretofore described is of ordinary construction but the releasing lever is somewhat different from that heretofore employed and has a different connection with the actuating link. The releasing lever member provided in the present case and numbered 51, is, as shown in Fig. 3, angular in shape and is supported by pivot screws 52 on a stationary bracket 53. The forward portion or arm of said lever carries a releasing pinion 54 which underlies the releasable carriage feed rack 16 and is normally disconnected therefrom as appears in Figs. 1 and 2 but is adapted to be swung upward to engage said rack and lift it out of mesh with the feed pinion 20, thus releasing the carriage. The releasing actuations are communicated to the releasing lever 51 from the actuating link 50, the rear arm of said lever and the upper end of said link being connected in a novel manner.

Said rear arm of the lever 51 is provided with an angular slot 55, said slot comprising a substantially horizontal portion and having a vertically disposed portion or enlargement at the forward end of the horizontal portion. The upper end of the link is bifurcated to embrace the lever 51 as clearly appears in Fig. 3, the bifurcations 50^a being connected at their upper ends by a cross pin or actuating stud 56 which extends transversely through the slot 55 and is adapted to actuate the lever 51 when located near the rear end of said slot as shown in Figs. 1 and 3. With the link and stud thus located an operation of one of the tabulator keys 40 will project the associate stop lever 36 and also cause the link 50 to pull down the stud 56, said stud acting against the lower side of the horizontal portion of the slot 55 and swinging the releasing lever on its pivots, thus causing the pinion 54 to release the carriage which will move leftward until arrested by the engagement of the proximate column stop with the projected stop lever. The tabulating operations thus performed are of the regular and ordinary character.

As has been stated it is desirable at times to tabulate in the reverse direction, that is, to arrest the carriage at predetermined points in its travel from left to right instead of from right to left as is usual. To provide for this reverse method of tabulating I have devised key controlled switching mechanism which is settable at will to disconnect the releasing devices and throw them out of the operative control of the tabulator keys. The switching mechanism includes a switch member or lever member which comprises a sleeve or hollow shaft 57 rotatably mounted on the shank of a vertically disposed bearing screw 58 which depends from the top plate and has its upper end 59 reduced and threaded into said top plate, a nut 60 being provided to secure said bearing screw adjustably in place. Fixed to the sleeve 57 near its upper end is a laterally and rearwardly extending crank arm 61 formed with a slot 62, the side walls whereof loosely embrace the link 50. A restoring spring 63 secured to said crank arm 61 at one end, and having a stationary anchorage at its opposite end tends to pull the crank arm constantly forward. Near its lower end the sleeve 57 has secured to it an oppositely extending crank arm 64 which is connected by a forwardly extending link 65 with a pin or screw 66 projecting laterally from a second lever member 67 pivoted on a fixed fulcrum device or screw 68. The forward end of the link 65 is looped around the shank of the screw 66 and is confined between the head of said screw and a washer 69 arranged on said shank. The forward end of the lever or arm 67 is bent laterally

rightward in front of the neighboring corner post and is formed into a finger piece or key 70 by which the switching mechanism may be conveniently actuated. A combined
 5 indicating and stop frame or plate 71 is detachably secured by screws 72 to the front post aforesaid. Said frame is angular in cross section to fit around the inner front corner of the post 2 and its front portion is
 10 provided with suitable indicating marks such as "Tab" and "Off," while its side portion is provided with laterally extending stop pins or lugs 73 and 74 for cooperation with the arm or lever 67, the pivot screw 68
 15 whereof is screwed into said side portion. It will be observed that the link 65 is connected to the lever 67 between its fulcrum and the key or finger piece 70, and when the line of the link is below the fulcrum, as in
 20 Figs. 1, 3 and 4, the spring 63 which, acting through the lever member 57, 61, 64, tends constantly to pull said link 65 rearward, will maintain the arm 67 engaged with the stop 73. Since the arm 67 is connected
 25 through the train of devices described with the crank arm 61 said crank arm will thus have a definite and predetermined location at this time and its slot 62 will serve to guide the link 50 in its up and down movements when actuating the lever 51 and will
 30 hold said link in proper normal relationship with said lever. It will further be noted that at this time the finger piece 70 is below the "Tab" mark on the indicating plate and
 35 nearer to said mark than to the other or "Off" mark, thus visually indicating to the operator that the switch is out of operation and that the releasing devices are set for operation so that they will release the carriage
 40 when the tabulator keys are operated. When it is desired to switch the releasing devices out of the control of the tabulator keys the key or finger piece 70 is swung upward operating through the link 65 to turn
 45 the crank arm 64 rearward and the crank arm 61 forward, said arm 61 in turn operating to swing or switch the link 50 forward from the Fig. 1 position to the position shown in full lines in Fig. 2. In the
 50 upward swinging movement of the arm 67 the forward end of the link 65 will swing upward and rearward past the fulcrum point 68 and as soon as it crosses the dead center the spring 63 will tend to cause the
 55 arm 67 to continue its upward swing and when said arm is arrested by the upper stop 74 as shown in Fig. 2, said spring will tend to maintain the arm engaged with the stop, thus definitely locating the crank arm 61
 60 and the link controlled thereby in a new position with the result that the actuating stud 56 will be re-located at the forward end of the slot 55 and just above the vertically disposed portion thereof. The spring 63 as
 65 will thus be seen is double acting, tending

at one time to maintain the arm 67 down against the stop 73 and at another time to hold it up against the stop 74. The stop devices comprising the arm 67 and the stop pins 73 and 74 thus cooperate with the assistance of the spring 63 to hold the guide
 70 device or slotted crank arm 61 in a plurality of predetermined positions, thus locating the actuating device or stud 56 at predetermined positions in relationship to the
 75 actuated member or lever 51. Of course, it is to be understood that while the construction involving the arm or key lever 67 and the associate stops 73 and 74 is preferred yet these devices, together with the described
 80 indicating devices, may be dispensed with and the link or push-and-pull-rod 65 may simply be guided at its forward end so that said rod may be pulled forward and
 85 pushed back to effect the shifting of the link 50. When said stud is located at its forward or Fig. 2 position as last described it will normally act against the upper horizontally disposed wall of the slot to prevent
 90 the rear arm of the lever from swinging downward, the result being that the releasing pinion 54 will be restrained from accidentally swinging upward into engagement with the feed rack 16. This is a desirable
 95 feature of construction as, otherwise the lever would be free to swing on its pivot, and though the forward arm of said lever is somewhat the heavier and the tendency of the pinion 54 is to remain down out of mesh, still it might accidentally engage with the
 100 rack to obstruct or interfere unnecessarily with the movements of the carriage. With the parts switched as described it will be understood that the finger piece 70 is proximate to the upper indicating mark on the
 105 plate 71, thus indicating visually that the releasing mechanism is "Off" or disconnected. At this time if a tabulator key be operated its associate stop lever will be projected as before and the key connections will
 110 operate the rock shaft 48 and link 50, moving these parts to the dotted line positions shown in Fig. 2. The downward movement of the link, however, at this time will be ineffective to actuate the lever 51 for the reason
 115 that the stud 56 will move downward in the vertical portion of the slot 55 to the position shown by dotted lines in said Fig. 2, the parts being so proportioned and arranged that at the end of the stroke the stud will
 120 not quite have reached the bottom of the slot. In other words, the stud has a lost motion connection with the lever 51 at this time and will move up and down without actuating it. The only effect then of an
 125 operation of the tabulator key will be to project the associate stop lever; and the operator holding said tabulator key pressed in pushes the carriage from left to right until
 130 it is arrested by the engagement of the prox-

imate column or carriage stop with the projected stop lever or frame stop. The tabulator key is then released, the carriage remaining in the arrested position by reason of the co-action of the escapement devices which remain constantly effective on said carriage during the reverse tabulating operation described. It will be apparent that if the carriage at this time were not connected with its escapement devices it might move leftward one or more spaces if the operator should lessen the rightward pressure against it before fully releasing the actuated tabulator key. On the other hand, even if under such circumstances such key were released properly the carriage might move a letter space rightward from the arrested position, this movement being the result of the re-adjustment of the carriage feeding escapement devices among themselves when a connection between them and the carriage was effected. In any case care and time would be required to maintain the carriage in the arrested position at the end of a reverse tabulating operation if the carriage while being pushed back was released or disconnected from the escapement devices. This reverse mode of tabulating is convenient in listing operations as after an arrest of the carriage as has just been described, the operator writes in the number or other item comprised in the list, thus causing the carriage to space step-by-step leftward and thereafter merely actuates the proper tabulator key and operates the line spacing handle of the machine to line space the sheet, concurrently pulling the carriage toward the right until it is again arrested. Such arrest brings the carriage in proper position for writing the next item in the list under the item previously written. Thus considerable time is saved, as by the usual mode of tabulating the operator would, after writing in one item, pull the carriage rightward to the limit of its movement and then actuate the tabulator key to project the desired stop and permit the carriage to run toward the left until arrested. The carriage during such run would travel over again, but in the opposite direction, a considerable part of the path which it had just followed in moving from left to right. This unnecessary repetition of movement is saved by the employment of the reverse tabulator as described. Of course, reverse tabulating is not suited to all styles of tabulating work, but as has been stated is quite useful in operations of a listing character or the like. When it is desired to tabulate in the regular way it is only necessary to swing the key or finger piece downward from the Fig. 2 to the Fig. 1 position, this operation rendering the tabulator keys again effective to release the carriage. In other words, the switching key is effective to throw the train

of releasing devices into or out of the control of the tabulating mechanism at will.

It will be observed that I have provided by my present invention a device simple in character and which may be applied to existing styles of typewriting machines without greatly changing any of the parts and that said device extends the functions of the ordinary tabulating mechanism and the consequent usefulness thereof.

Various changes may be made without departing from my invention.

What I claim as new and desire to secure by Letters Patent, is:

1. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points in either direction of its travel, carriage releasing devices, and means for at will rendering said devices effectively operative by the tabulator keys.

2. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points in either direction of its travel, carriage releasing devices, and separate key controlled means for at will throwing said devices into and out of the control of the tabulator keys.

3. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points, carriage releasing devices normally operative by the tabulator keys, and means for rendering the tabulator keys inoperative on said carriage releasing devices.

4. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points, carriage releasing devices normally operative by the tabulator keys, and a separate key controlled switching mechanism effective to throw said devices out of the control of the tabulator keys, said switching mechanism comprising a pair of lever members and a connecting link, one of said lever members being provided with a finger key.

5. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points; carriage releasing devices normally operative by the tabulator keys; and a separate key controlled switching mechanism effective to throw said devices out of the control of the tabulator keys, said switching mechanism comprising an upright shaft provided with crank arms one connected to the releasing devices and the other to a link, and a finger piece also connected to said link.

6. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at pre-

determined points in either direction of its travel; carriage releasing devices; and separate key controlled means for at will throwing said devices into and out of the control of the tabulator keys, said means comprising a lever member directly operative on the carriage releasing devices, a spring for said lever member, a finger piece, and a link connecting said finger piece with said lever member.

7. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points in either direction of its travel; carriage releasing devices comprising a slotted releasing lever and an actuating link engaging the slot in said lever; and a key controlled switching member operative at will to shift said link to different positions along said slot, said link in one of said positions being ineffective to actuate said releasing lever.

8. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points in either direction of its travel, carriage releasing devices comprising a slotted releasing lever, an actuating link engaging the slot in said lever, and a key controlled switching member operative at will to shift said link to predetermined positions along said slot, said link in one of said positions being effective to actuate said releasing lever and in another position being ineffective to actuate said lever but operating to maintain said lever in its disengaged or inoperative position.

9. In a typewriting machine, the combination of a carriage, carriage feeding devices including a releasable rack, carriage releasing devices including a release lever provided with an angular slot, an actuating link engaging said slot, and a rock shaft for operating said link; key controlled tabulating mechanism effective to arrest the carriage at predetermined points, said tabulating mechanism also actuating said rock shaft; and means for switching said link to different portions of said angular slot, said link in one position being adapted to actuate said release lever and in another position having a lost motion connection with said lever.

10. In a typewriting machine, the combination of key controlled tabulating mechanism effective to arrest the carriage at predetermined points in its travel, carriage releasing devices comprising a lever formed with an angular slot, an actuating link provided with a stud engaging said slot, and a key controlled switching member operative to shift said link to vary the position of said stud in said slot, said stud in one position having a lost motion connection with said slot and in another position acting against

the wall of the slot to prevent turning movement of said lever in a direction to release the carriage.

11. In a typewriting machine, the combination of a carriage, carriage feeding devices comprising a releasable rack, a release lever provided at one arm with a pinion engageable with said rack but normally disconnected therefrom, the other arm of said lever being formed with an angular slot, a rock shaft, a link connected to said rock shaft and engaging said slot, a column stop on the carriage, a set of denominational stops, key connections to said denominational stops, said connections being operative to turn said rock shaft, a second rock shaft, a crank arm on said second rock shaft engaging said link, a second crank arm on said second rock shaft, and a finger piece connected to said second crank arm and operative to actuate the first named crank arm to switch said link.

12. In a typewriting machine, the combination of a carriage, a tabulator stop thereon, a stop on the frame of the machine, carriage releasing devices, key connections effective to project the frame stop into the path of the carriage stop and also to release the carriage, and a key controlled switch operative at will to throw the carriage releasing devices out of the control of said key connections and render said key connections effective only to project said frame stop.

13. In a typewriting machine and in tabulating mechanism, the combination of tabulator stops cooperative to arrest the carriage at a predetermined point, means including a key for effecting such cooperation, carriage releasing devices controlled by said key, and means for at will silencing said devices when said key is actuated.

14. In a typewriting machine and in tabulating mechanism, the combination of tabulator stops cooperative to arrest the carriage at a predetermined point, means including a key for effecting such cooperation, carriage releasing devices controlled by said key, and means controlled by a separate key for throwing the releasing devices out of connection with said first named key.

15. In a typewriting machine, and in tabulating mechanism, the combination of tabulator stops cooperative to arrest the carriage at a predetermined point, carriage releasing devices including a switchable member or link, a guide therefor, and key connections for varying the normal position of said guide and through it of said link.

16. In a typewriting machine and in tabulating mechanism, the combination of tabulator stops cooperative to arrest the carriage at a predetermined point, carriage releasing devices including a switchable member or link, a key controlled guide therefor, stop

devices effective to arrest said guide in a plurality of predetermined positions, and a double acting spring effective to maintain the stop devices in co-action to definitely locate said guide in either of its predetermined positions.

Signed at the borough of Manhattan, city

of New York, in the county of New York, and State of New York, this 20th day of December A. D. 1912.

CLIO B. YAW.

Witnesses:

CHARLES E. SMITH,
M. F. HANNWEBER.

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