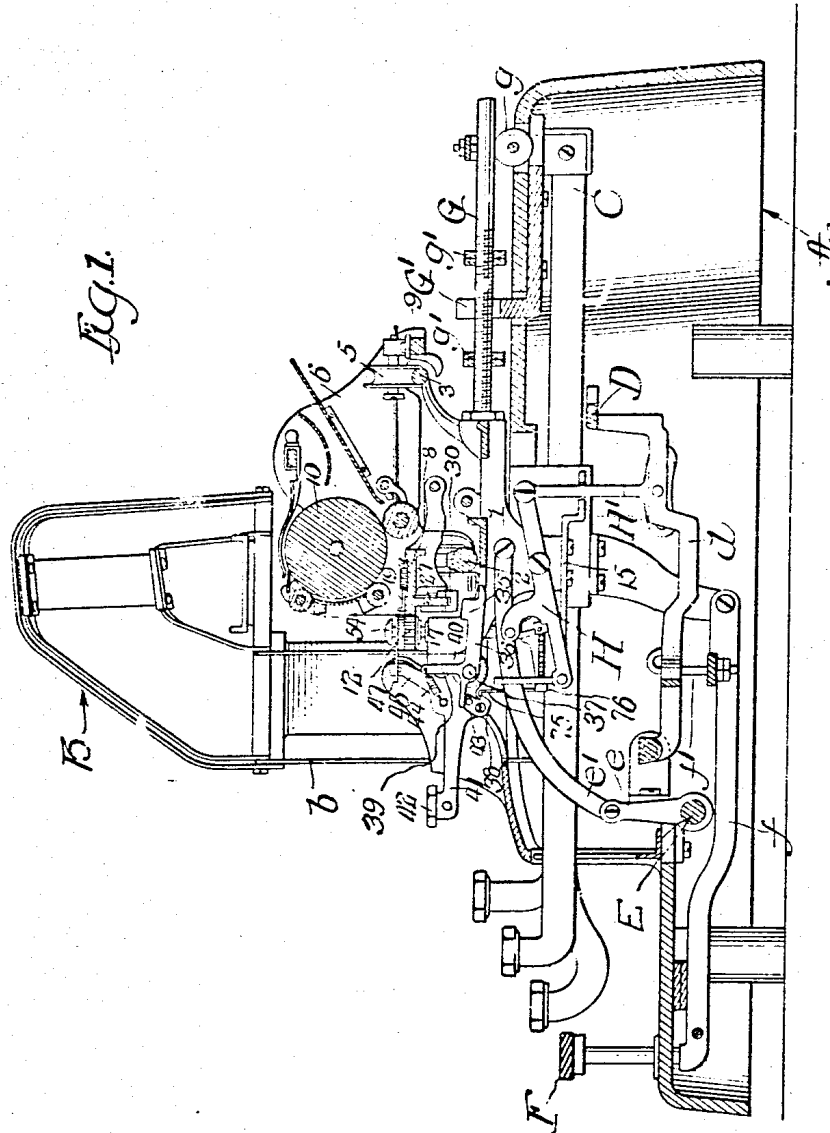


T. L. KNAPP & C. C. HARTING.
COLUMN STOP MECHANISM FOR TYPE WRITERS.
APPLICATION FILED SEPT. 21, 1908.

959,061.

Patented May 24, 1910.

5 SHEETS—SHEET 1.



Witnesses:
B. A. Helms
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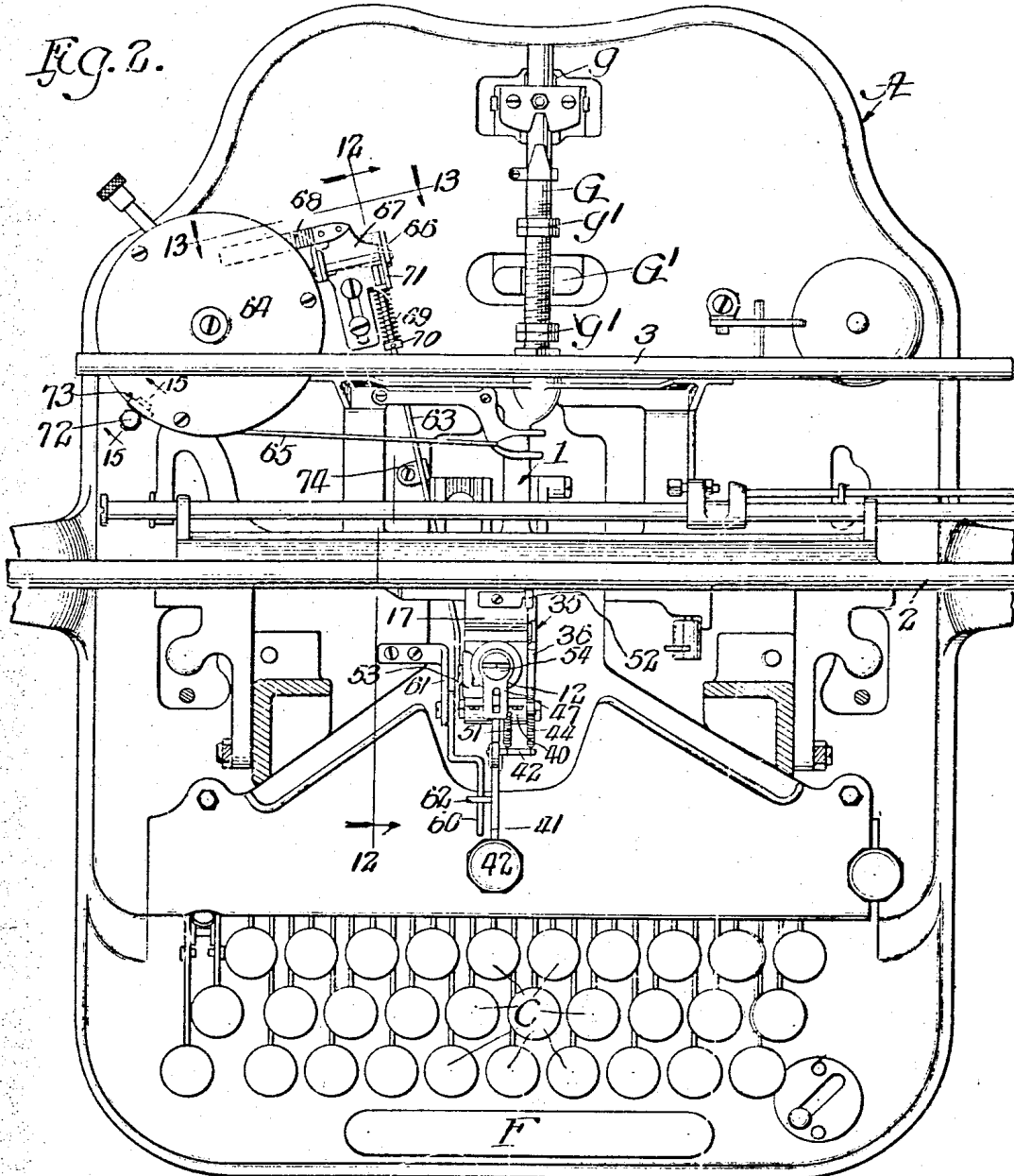
Inventors
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6 SHEETS—SHEET 2.



Witnesses:
 J. H. Alfred
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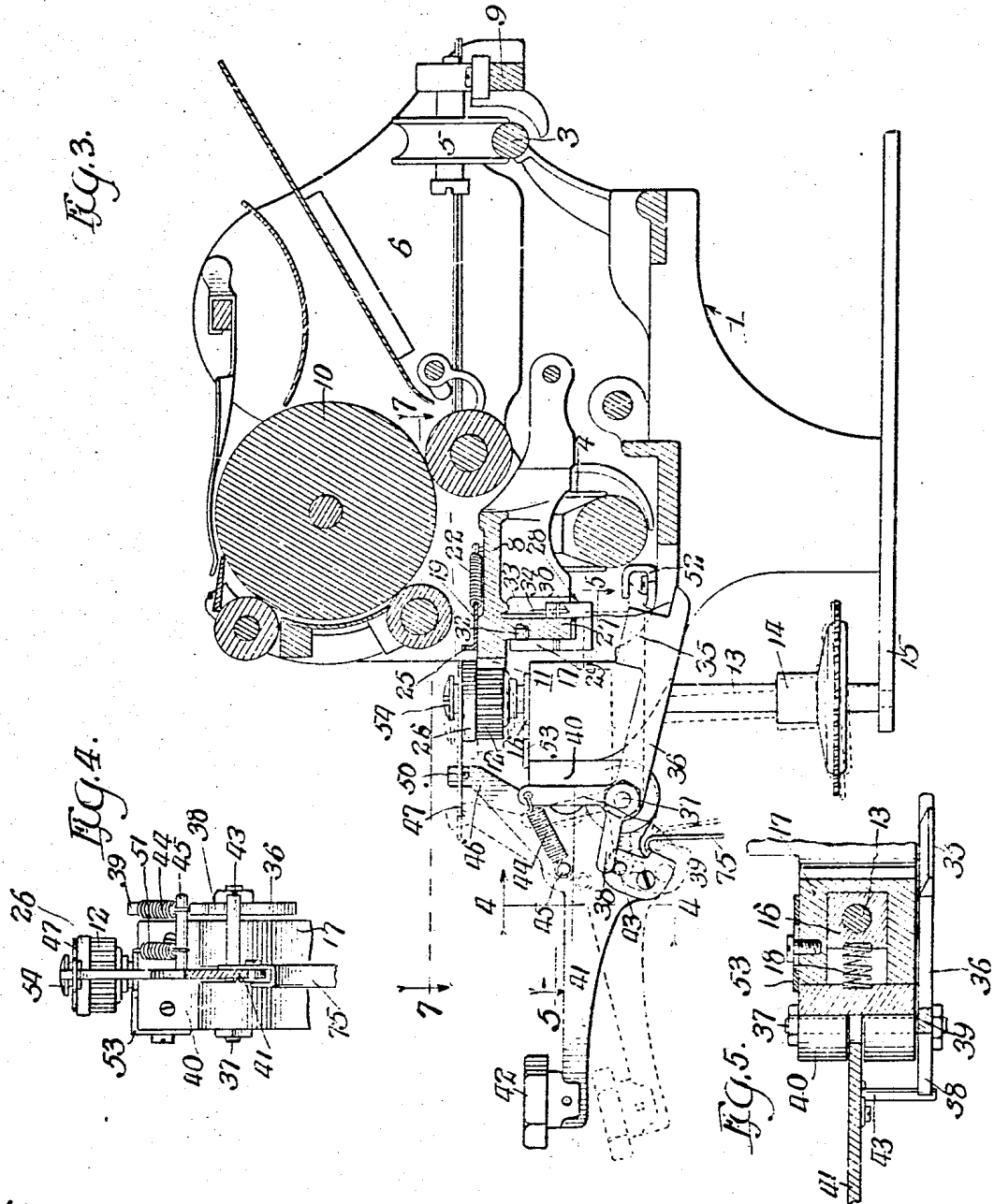
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6 SHEETS—SHEET 3.



Witnesses:
 F. H. Alfred
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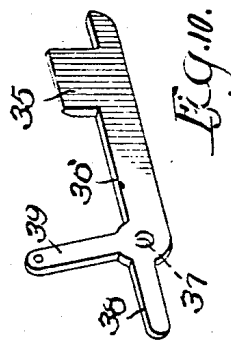
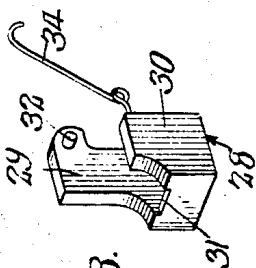
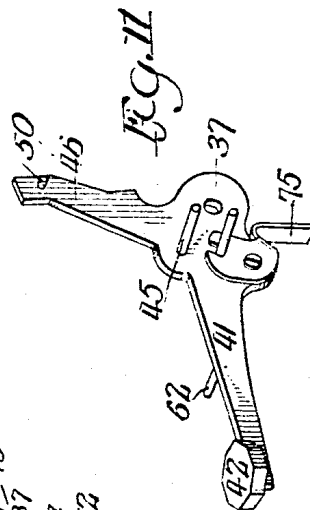
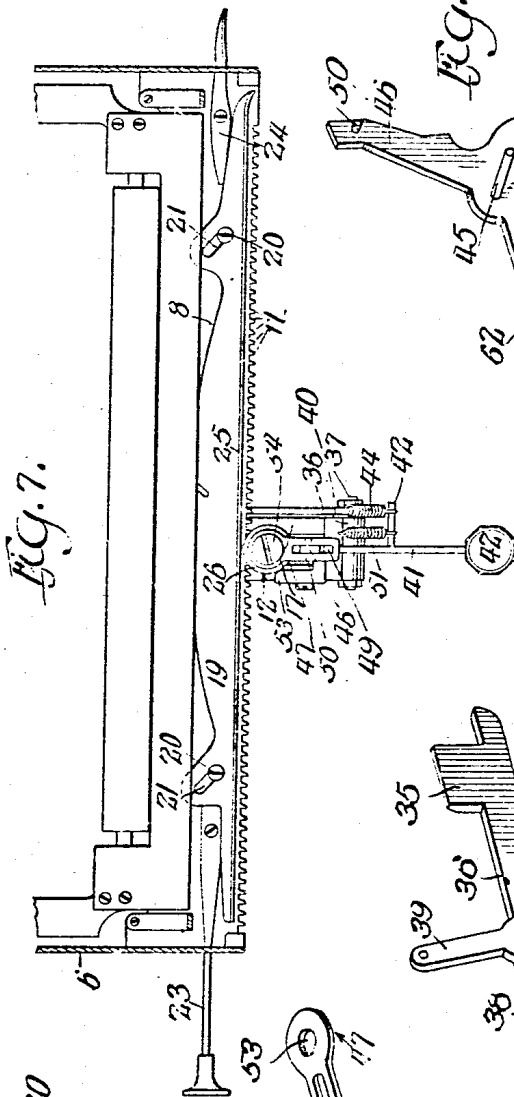
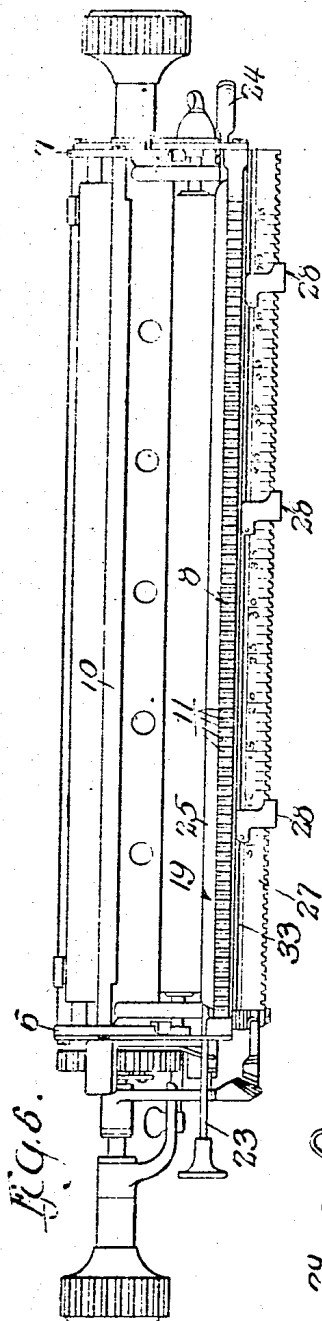
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5 SHEETS—SHEET 4.



Witnesses:
D. H. Hilde
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Fig. 8.

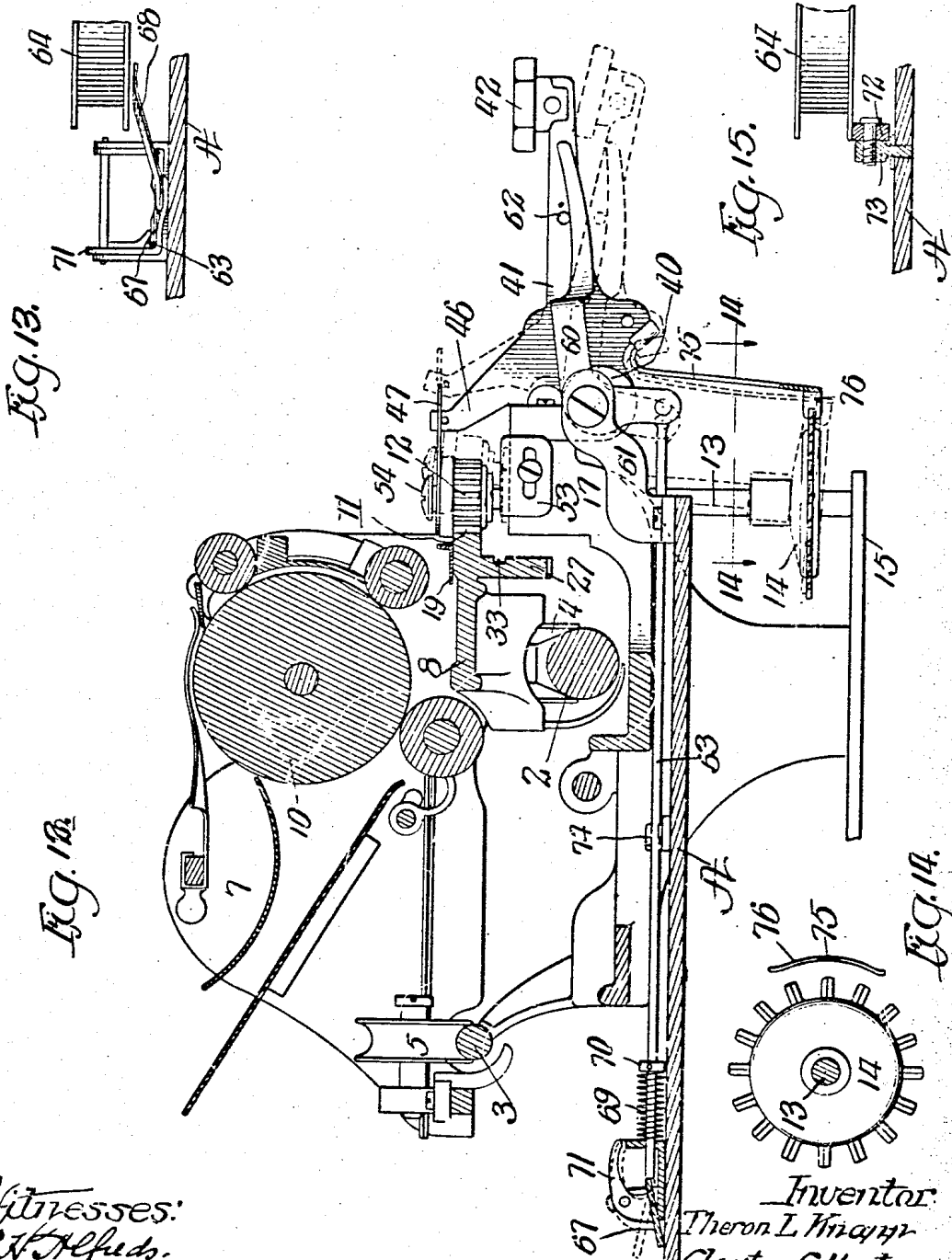
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5 SHEETS—SHEET 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

Theron L. Knapp and Clayton C. Harting, of Woodstock, Illinois, Assignors
to the Oliver Typewriter Company, of Chicago, Illinois, a Corporation
of Illinois.

COLUMN-STOP MECHANISM FOR TYPE-WRITERS.

959,061.

Specification of Letters Patent. Patented May 24, 1910.

Application filed September 21, 1908 Serial No. 454,102.

To all whom it may concern:

Be it known that we, Theron L. Knapp and Clayton C. Harting, citizens of the United States, and residents of Woodstock, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Column-Stop Mechanism for Type-Writers; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

This invention relates to an improved tabulating or column stop mechanism for typewriting machines designed to effect the release of the carriage from the control of the usual letter-spacing devices and permit the carriage to move, under the action of its actuating spring, to a predetermined point or points, at which the movement of the carriage is arrested, for the purpose of printing a series of items or numbers in one or more vertical lines or columns upon the sheet.

The invention relates more particularly to that class of column stop devices in which the carriage is provided with one or more adjustable stops which are mounted, and are longitudinally adjustable, upon a longitudinal member of the carriage frame and which are adapted to operate in connection with a key-actuated stop-member which is movable into and out of the path of the stop or stops upon the carriage.

The invention is herein shown as applied to a typewriting machine of the kind known as the "Oliver" machine, but the features constituting the invention may be applied to machines of other kinds.

The invention consists in the matters hereinafter set forth and pointed out in the appended claims.

In the accompanying drawings illustrating our invention: Figure 1 is a view in central vertical section of a typewriting machine embodying our invention. Fig. 2 is a plan view of the machine with the paper-carriage and type-bars removed, showing the type-bar supporting standards in section. Fig. 3 is a view in central vertical section on an enlarged scale of the shift-frame and paper-carriage of the machine. Fig. 4 is a vertical section, taken upon line 4—4 of Fig. 3. Fig. 5 is a horizontal section, taken upon

line 5—5 of Fig. 3. Fig. 6 is a face or front view of a paper carriage of the machine showing the adjustable stops thereon. Fig. 7 is a horizontal section, showing parts of the carriage and the stop-mechanism on the shift-frame, taken on line 7—7 of Fig. 3. Fig. 8 is a perspective view of one of the stops on the carriage. Fig. 9 is a view showing, detached from the other parts, the connecting bar forming part of the means for operating the carriage-release devices. Fig. 10 is a perspective view of the stop-lever on the frame of the machine. Fig. 11 is a perspective view of the key-lever by which said stop-lever is operated. Fig. 12 is a detail sectional view on an enlarged scale of the shift-frame, paper-carriage and adjacent parts of the machine, taken on the indirect line 12—12 of Fig. 2. Fig. 13 is a detail section taken on line 13—13 of Fig. 2. Fig. 14 is a detail section taken on line 14—14 of Fig. 12. Fig. 15 is a detail section taken on line 15—15 of Fig. 2.

As shown in said drawings, A (Figs. 1 and 2) indicate the base-frame of a typewriting machine, and 1 indicates the frame by which the paper-carriage is immediately supported and which has shifting movement backwardly and forwardly on said base-frame and which is herein called the "shift-frame". The paper-carriage has endwise or letter-space movement on said shift-frame and said shift-frame has backward and forward movement on the paper-carriage to provide for shifting the platen in such manner as to bring the paper in position for receiving impressions from two or more types upon each type-bar of the machine.

Figs. 1 and 2 of the accompanying drawings illustrate the parts mounted on the base-frame A and which are not directly concerned with the present invention, said parts being one of the type-bars B, the key-levers C, one of which is shown as connected with the type-bars B by a link *b*, the universal bar D and one of its supporting arms *d*, a rock-shaft E through which the shift-frame 1 is moved or actuated and which is provided with an upwardly extending arm *e* connected with the shift-frame by a link *e'*, a spacing key F, one of the spacing-key levers *f*, and a link *f'* by which motion is transmitted from the spacing-key to the universal bar D. Said shift-frame is shown

in said Fig. 1 as provided with a rearwardly extending rigidly attached guide-rod G which rests at its rear end on a guide-roller *g* mounted on the frame A, said guide-rod G being provided with stop-nuts g^1, g^2 adapted for contact with a standard G^1 on the base-frame A. II indicates the escapement lever of the machine which is mounted on the shift-frame 1 and is operated from the universal bar D by means of an upright rod H'. The parts above described correspond with the similar parts heretofore employed in what is known as the "Oliver" typewriting machine. Said shift-frame is provided with front and rear horizontal guide-rods 2 and 3, extending transversely of the machine, on which travel the supporting rollers 4 and 5 of the carriage during the end-wise or letter-space movement of the carriage. The frame of said carriage, as shown, consists of end plates 6 and 7 and forward and rear longitudinal frame bars or members 8 and 9 which extend between and rigidly connect said end plates. 10 indicates the paper roller or platen of the carriage which is mounted on the end plates 6 and 7, in the usual manner. The said longitudinal front frame member 8 of the paper carriage constitutes the rack-bar thereof and is provided on its front edge with a series of ratchet teeth 11 which are engaged by a gear pinion 12 mounted on the upper end of an upright shaft 13 mounted on the forward part of the shift-frame. Said shaft 13 has, at its lower end, an escape wheel 14 which is part of the escape mechanism which is operated by the universal bar of the machine and by which is controlled the end-wise or letter-space movement of the carriage under the action of the carriage actuating spring. The escape wheel shaft 13 has a bearing at its lower end in a forwardly projecting arm 15 on the lower part of the shift-frame and at its upper end engages a bearing block 16 (Fig. 5) which is adapted to slide horizontally in a guide slot formed in the upper end of a bracket 17, which is attached to and projects forwardly from the shift-frame. The sliding movement of the bearing block 16 in the said bracket 17 permits the gear pinion 12 to be moved or shifted forwardly and backwardly into and out of engagement with the ratchet teeth 11 and said block is held at the inward limit of its movement by an expansively acting coiled spring 18 applied between the outer face of said block and the outer end of the slot in the bracket 17.

19 indicates the release bar of the carriage which is arranged horizontally above the frame bar 8 and adapted to slide thereon in a horizontal plane. Said release bar is provided with oblique slots 21 engaged by studs 20 which rise from said frame bar 8. Said release bar is held at the rearward

limit of its movement by a coiled spring 22 and is operated to shift the same forward against the action of said spring 22 by means of an endwise sliding trip-rod 23 arranged longitudinally at the left-hand end of a carriage, and adapted to act upon the left-hand end of the release bar in such manner as to throw the same forwardly and toward the left when pressure is applied to the outer end of said trip-rod. A pivoted lever 24 is also located at the right-hand end of the carriage and is adapted to also act upon the release bar to throw the same forward against the action of the spring 22. Said release bar is provided at its forward edge with an upturned or vertical, marginal flange 25 which has bearing contact with a rotative ring or roller 26 mounted on the escape wheel shaft 13 above the gear pinion 12. When said release bar 19 is in its retracted position, the pinion 12 remains in engagement with the ratchet teeth on the carriage frame, but when said release bar is thrown forward the pinion is forced outwardly or forwardly far enough to disengage it from the said ratchet teeth and thereby release the carriage from the escape mechanism, by which letter-space movement thereof is controlled. So far as described, the parts are constructed in the same manner as in the "Oliver" typewriting machines as heretofore constructed.

The front frame member or rack-bar 8 of the paper-carriage is provided with a depending, longitudinal flange 27, which preferably extends the entire length thereof. Said flange is provided at its lower edge with a plurality of notches and preferably bears on its front face a scale, marked to correspond with the letter-space movements of the carriage. Mounted on said flange 27 are adjustable stop-members 28. Each of said stop-members, as clearly seen in Fig. 8, consists of a metal block provided in its upper part with a notch to receive the flange 27 and having at its lower part an upwardly extending tooth 31 adapted for engagement with the notches on the lower edge of the said flange. In the particular form of the stop-member shown, the same consists of two parallel separated plates 29 and 30 joined by a transverse connecting part on the upper edge of which is formed the tooth 31. The plate 29 is located in contact with the front face of the flange 27 and is provided near its upper edge with a stud 32 which projects rearwardly therefrom and is adapted to engage a longitudinal groove 33 formed in the front face of the flange 27. The plate 30 engages the rear face of the flange 27 and is provided with a spring arm 34 which projects upwardly and toward the left and is adapted to bear at its free end upwardly against the lower surface of the rack-bar

8. The stud 32 is located at a distance toward the left from the tooth 31, so that the upward pressure of the free end of the spring-arm 34 against the rack-bar 8 tends to turn or rotate the stop-member about the stud 32 in a direction to lift the tooth 31 or hold the same in engagement with one of the notches in the lower edge of the flange 27. To shift or move the stop-member on the flange 27, its right hand end is drawn downwardly to release the tooth 31 from the notch engaged thereby and the stop-member is then slid along the flange to the desired point thereon. When the stop-member is released its said right hand end is, by the action of the spring 34, thrown upwardly to bring the said tooth into engagement with another notch of the flange.

35 indicates a key-actuated stop on the shift-frame, which is movable vertically thereon to bring it into and out of the path of the stop-members 28 on the carriage. Said stop 35 is attached to the rear or inner end of a lever 36, arranged to extend from front to rear of the machine and pivoted on the bracket 17 of the shift-frame. A vertically arranged plate 40 is shown as attached to the forward end of the bracket 17, so as to close the forward end of the slot therein. Said plate extends below the said bracket and through its lower end is inserted a horizontally arranged pivot-rod 37 which projects beyond the right hand face of said plate 40 to form a journal or bearing for the said lever 36. At its forward end the lever 36 is provided with two rigid arms 38 and 39; the arm 38 constituting a forward extension of said lever and the arm 39 projecting upwardly from the pivotal axis thereof. To limit the upward swing of the lever 36 when the stop-member 35 is elevated and in the path of the stop-members 28, a horizontal stop-arm 52 is attached to the top surface of the shift frame and projects forwardly at the right of the bracket 17. The lever 36 is extended at its rear end rearwardly from the stop-member 35 and is adapted for contact with the lower surface of the fixed stop arm 52.

41 is a key-lever mounted on the bracket 17 so as to swing on an axis concentric with the pivot of the lever 36 and projecting forward from said bracket. Said key-lever is preferably mounted on the pivot-rod 37 centrally of the bracket 17; its rear end being inserted in a vertical slot formed in the lower edge of the plate 40. Said key-lever is provided at its outer end with a key 42 by which it may be operated. Said key-lever is provided with a stud 43 which projects from the right-hand face thereof in position to engage the under side or lower edge of the arm 38 on the lever 36. Said key-lever 41 is connected with the upwardly extending arm 39 of the lever 36 by means

of a contractile, coiled spring 44 connected at one end with said arm 39 and at its opposite end with the key-lever at a point forward of said arm. The spring is conveniently connected with the key-lever by means of a stud 45 affixed to and projecting from the right hand side of said key-lever. Said spring 44 tends to draw the upper end of the arm 39 forward and to hold the arm 38 in contact with the stud 43 on the key-lever. Said key-lever 41 is provided with a lifting spring by which its front end is held normally elevated; said lifting spring, as shown in the drawings, consisting of a contractile coiled spring 51 which is connected at one end with the stud 45 and at its other end with the plate 40.

The key-lever 41 is held normally in its elevated position by the spring 51; the upward movement of the outer end of said key-lever under the action of said spring being limited by contact of the vertical shoulder on the rear face of said key-lever with the front face of the plate 40. The downward movement of said key-lever is limited by an adjustable stop-plate 53 which is secured to the left hand side face of the bracket 17 and is provided with a transverse, horizontal stop-arm that extends over the top of the bracket 17 in front of the sliding block 16 and in the path of the upper end of said block which extends above said bracket. Said stop plate 53 is secured to the bracket 17 by a screw (Fig. 1c) passing through a horizontal slot in the plate, affording backward or forward adjustment of said stop plate.

The key-lever 41 is provided at its rear or pivoted end with an upwardly extending rigid arm 46, the upper end of which is connected with a horizontally arranged connecting bar 47, through the medium of which motion is transmitted from the key-lever to the upper end of the escape-wheel shaft 13. Said connecting bar 47, as clearly seen in Fig. 3, is arranged above the level of the gear pinion 12 and is provided with an aperture 53 through which passes a screw stud 54 which is inserted into the upper end of the shaft 13 and serves to retain thereon the ring or collar 26, and to connect the rear end of the bar 37 with the said shaft. The upwardly extending arm 46 of the key-lever 41 is connected with said bar 47 in a manner to afford lost motion between said arm and bar, the parts for this purpose being constructed as follows: The bar 47 is provided at its forward end with a longitudinal slot 49 through which the upper end of the arm 46 of the key-lever upwardly projects; the front and rear edges of the arm 46 being adapted for contact with the opposite ends of the slot 49, which is made long enough to afford the desired extent of lost motion between the key-lever and the said bar. Said

arm 46 of the key-lever may be provided, below the bar 47, with a transverse pin 50 to support the forward end of said bar.

In the normal or elevated position of said key-lever 41, the upper end of its arm 46 stands in a position intermediate between the ends of the slot 49 in the connecting bar 47 (Fig. 2), so as to leave said bar 47 free to be moved forwardly with the upper end of the escape-wheel shaft 13 when the latter is swung forwardly to disengage the pinion 12 from the carriage rack in the usual operation of the carriage release devices. When said key-lever 41 is depressed by downward pressure of the finger on the key 42, the lever 36 and the stop-member 35 thereon are swung or moved with the key-lever to lift the stop-member into the path of the stop-members 28, 28, on the carriage, such movement of the lever 36 with the key-lever 41 resulting from the fact that the spring 44 which connects the arm 39 of said lever 36 with the key-lever, acts to retain the arm 38 on said lever 36 in contact with the stud 43 on the key-lever. The movement of said lever 36 with the key-lever 41 continues until the upward movement of said lever 36 is arrested by its contact with the lower surface of the stop-arm 52, which occurs when the stop-member 35 is elevated sufficiently to bring it into the path of the stops on the carriage frame. The upper end of the arm 46 of the key-lever, is so arranged with respect to the outer end of the slot 49 in the connecting bar 47 that the key-lever will be moved downwardly far enough to bring the stop-member 35 to its elevated or carriage arresting position before the arm 46 comes into contact with the outer end of said slot 49 in the connecting bar. When, in the downward movement of the key-lever 41, its arm 46, in the forward movement of the latter, strikes the outer end of said slot 49 in the bar 47, the said bar will be drawn or shifted outwardly or forwardly by the action of the key-lever, and the said bar, by the engagement of its inner end with the upper end of the escape-wheel shaft 13 will draw forward the upper end of the said shaft 13, thereby releasing the pinion 12 from the carriage rack-bar and leaving the carriage free to travel or move toward the left until its movement is arrested by contact of one of the stops 28 with the stop-member 35. The downward movement of the key-lever may continue until the upper end of the shaft 13 reaches the forward limit of its movement, when further downward movement of said key-lever will be arrested.

60 A typewriting machine equipped with column-stop or tabulating mechanism such as is above described may be operated for ordinary writing in the usual manner without interference by reason of the presence of said mechanism. When it is desired to do

tabulating work or to write a series of items or numbers in one or more columns on a sheet, one or more of the stop-members 28 are applied to the carriage and located at the required position or positions thereon according to the desired lateral location on the sheet of the column or columns to be written. Then upon depressing the key-lever 41, the carriage will be released and run to the position determined by the first or left-hand column stop, when the desired item may be printed in the column. When the printing of that item is completed, the key-lever 41 may again be depressed and the carriage will be released and allowed to run freely to the position determined by the second stop, and the writing in the second column may be likewise effected. Similarly, the carriage may be released and stopped in position for printing a third or any other number of columns on the sheet.

In order to avoid undue shock or jar when the movement of the carriage is arrested by the action of the column stop mechanism, means for retarding or controlling the speed of the paper carriage when released and allowed to run, as described, is provided as follows:

60 indicates a bell-crank lever (Figs. 2 and 12) which is mounted in a bracket 61 attached to the side of the base-plate of the machine, at the left-hand side of the key-lever 41. Said bell-crank lever has a forwardly projecting arm which extends beneath a stud 62 on the key-lever 41, and a depending arm, to the lower end of which is pivotally connected the forward end of a horizontally arranged endwise sliding operating rod 63 which is mounted above the horizontal top of the base-plate A and extends toward the rear of the machine.

64 indicates the spring barrel of the machine, in which is contained the carriage-actuating spring and from which motion is communicated to the carriage by a flexible connecting member 65.

66 indicates a bracket-member attached to the base-plate A at one side of the barrel 64 and in which is pivotally supported a rocking member 67 adapted to turn or swing in a horizontal axis arranged at right angles to the rod 63. Attached to said rocking member 67 (Figs. 2 and 13) at the rear of its pivotal axis is a spring arm 68 which extends beneath and is adapted to bear upwardly against the spring-barrel 64. Said spring-arm constitutes in effect a yielding brake-member. The rear end of the rod 67 bears against a forwardly facing surface of the rocking member below its pivotal axis that rearward endwise movement of the said rod operates to swing the rocking member in a direction to press the spring-arm 68 upwardly against the spring-barrel. The rear end of the rod 63 is supported and

guided in the bracket-member 66, and a coiled spring 69, interposed between said bracket-member and a collar 70 on said rod, tends to hold the rod at the forward limit of its movement and to hold the forwardly projecting arm of the bell-crank lever 60 in an elevated position and in contact with the stud 62 on the key-lever 41. A forwardly extending rigid arm 71 on the rocking-member 67 is adapted for contact with the top of the bracket-member 66 in a manner to limit the upward movement of the spring-arm 68. When the key-lever 41 is depressed to elevate the stop 35, and to release the carriage, as hereinbefore described, the bell-crank lever 60 is swung or moved so as to thrust the rod 63 rearwardly and to press the spring arm 68 into frictional contact with the spring-barrel, with the effect of checking or retarding its rotary movement under the action of the carriage-actuating spring. The key-lever 41 has backward and forward movement with the shift-frame on which it is mounted, and the stud 62 on said key-lever slides on the horizontal arm of the bell-crank lever 60 so as to act on said bell-crank lever with the same effect in all positions of the shift-frame.

A supporting roller 73 (Figs. 2 and 15) mounted on a bracket 72 and extending beneath the spring-barrel at a point diametrically opposite the spring-arm 68 acts to resist any tendency of the spring-barrel to tip or tilt on its upright pivot under the upward pressure of the spring-arm 68 against the said barrel. A guide lug 74, attached to the frame-plate A, and engaging the central part of the rod 63, serves to prevent said rod from bending at its middle under the endwise pressure with a friction brake device applied to act on the spring-barrel, as described.

A device is provided for checking the rotary motion of the escape wheel as follows: A spring-arm 75 (Figs. 12 and 14) is attached to and extends downwardly from the key-lever 41 and is provided at its lower end with a curved brake-member 76 adapted for contact with the ends of the peripheral teeth on the escape-wheel when the key-lever is depressed. The brake-shoe thus arranged and operated acts to hold the gear-pinion 12 and escape wheel from turning during the time that the said gear-pinion is released from the carriage rack-bar, so that, upon the reengagement of said pinion with said rack-bar upon the release of the key-lever 41, the parts of the letter-spacing mechanism will be in the same relative positions as they were before the release of the carriage and the regular action of said letter-spacing mechanism will not be affected by such release of the carriage therefrom and its subsequent reengagement therewith.

We claim as our invention:—

1. In a typewriting machine, the combination of a base-frame, a shift-frame movable backwardly and forwardly thereon, a paper-carriage movable on said shift-frame, and a spring-barrel mounted on the base-frame, through the medium of which endwise movement is given to the paper-carriage, letter-spacing mechanism for controlling the movement of the carriage on the shift-frame, column-stop mechanism for releasing said carriage from the letter-spacing mechanism and arresting its movement at a desired point, embracing a key-lever for operating said column-stop mechanism mounted on said shift-frame, brake mechanism mounted on the base-frame and acting on the spring-barrel, and means for actuating said brake mechanism from the key-lever embracing a movable member mounted on the base-frame and adapted to be acted upon by the key-lever in all positions of the shift-frame.
2. In a typewriting machine, the combination of a base-frame, a shift-frame movable backwardly and forwardly thereon, a paper-carriage movable on said shift-frame, a spring-barrel mounted on the base-frame, through the medium of which endwise movement is given to the paper-carriage, letter-spacing mechanism for controlling the movement of the carriage on the shift-frame, and column-stop mechanism for releasing said carriage from the letter-spacing mechanism and arresting its movement at a desired point, embracing a key-lever for operating said column-stop mechanism mounted on said shift-frame, a brake mechanism mounted on the base-frame and acting on the spring-barrel, and means for actuating said brake-mechanism embracing an actuating lever mounted on the machine frame, and which is provided with a horizontal arm located at one side of the key-lever, said key-lever being provided with a laterally extending stud adapted to act upon the said horizontal arm of the brake actuating lever in all positions of the shift-frame.
3. In a typewriting machine, the combination of a base-frame, a shift-frame movable backwardly and forwardly thereon, a paper-carriage movable endwise on said shift-frame, a spring-barrel mounted on the base-frame, through which endwise movement is given to the paper-carriage, letter-spacing mechanism for controlling movement of the carriage on the shift-frame, and column-stop mechanism for releasing said carriage from the letter-spacing mechanism and arresting its movement at a desired point, embracing a key-lever mounted on said shift-frame, brake mechanism for the spring-barrel embracing a rocking member pivotally supported on the base-frame and provided with a brake-arm for contact with the

spring-barrel, a brake actuating lever mounted on the machine frame by the said key-lever in all positions of the shift-frame, and an endwise movable operating rod on the base-frame, said rod being actuated by said operating lever and acting upon the said rocking member to press the brake-arm against the spring-barrel.

4. In a typewriting machine, the combination of a base-frame, a shift-frame movable backwardly and forwardly thereon, a paper-carriage movable endwise on said shift-frame, a spring-barrel through the medium of which motion is given the paper-carriage, letter-spacing mechanism for controlling the movement of the carriage on the shift-frame, and column-stop mechanism for releasing the carriage from the letter-spacing mechanism and arresting its movement at a desired point, embracing a key-lever for operating said column-stop mechanism mounted on said shift-frame, brake mechanism adapted to act upon the said spring-barrel and embracing a rocking member pivoted to the base-frame and provided with a brake-arm for contact with the spring-barrel, a bell-crank lever pivoted on the machine frame and provided with a depending arm and with a forwardly extending arm located at one side of and adjacent to the said key-lever, said key-lever being provided with a laterally extending stud engaging said horizontal arm, an endwise sliding operating rod connected with the depending arm of said bell-crank lever, the rear end of said rod being adapted to act upon the said rocking member, and a spring applied between the said operating rod and the base-frame and acting to hold said rod at the forward limit of its movement and the bell-crank lever with its forwardly extending arm adjacent to the said stud upon the key-lever.

5. In a typewriting machine, the combination of a base-frame, a paper-carriage, a spring-barrel mounted on the base-frame, through the medium of which endwise movement is given to said paper-carriage, letter-spacing mechanism for controlling the movement of the carriage, and column-stop mechanism for releasing said carriage from the letter-spacing mechanism and arresting its movement at a desired point, embracing a key-lever, a brake-mechanism provided with a brake-arm which presses upwardly on the spring-barrel, connections between said key-lever and the brake mechanism for operating the latter, and a supporting roller for the spring-barrel, mounted on the base-frame beneath the spring-barrel at a point diametrically opposite the brake-arm.

6. In a typewriting machine, the combination of a paper-carriage provided with a rack-bar, a rotative spring-barrel through the medium of which endwise movement is

given to the paper-carriage, letter-spacing mechanism for controlling the movement of the paper-carriage, embracing an escape-wheel shaft provided with a gear-pinion adapted to be engaged with and disengaged from the carriage rack-bar, and with an escape-wheel, column-stop mechanism for releasing said carriage from the letter-spacing mechanism and arresting its movement at a desired point embracing a key-lever, and a brake-member actuated by the said key-lever and acting on said escape-wheel to hold the same and its shaft from rotative movement when the paper-carriage is released from the letter-spacing mechanism, said brake member being in the form of a curved shoe adapted to engage the points of the teeth of the escape-wheel.

7. In a typewriting machine, the combination of a base-frame, a shift-frame having backward and forward movement on said base-frame, a paper-carriage movable endwise on the said shift-frame, said paper-carriage being provided with a forwardly facing rack-bar, letter-spacing mechanism embracing a rotative shaft provided at its upper end with a gear-pinion and at its lower part with an escape-wheel, the upper end of said shaft and the pinion thereon being movable toward and from the said rack-bar, column-stop mechanism for arresting the movement of the carriage at a desired point, embracing a key-lever for operating said column-stop mechanism, said key-lever being mounted on the shift-frame and having operative connection with the upper end of said escape-wheel shaft, and a brake-member operated by said key-lever and adapted to hold the escape-wheel and its shaft from turning when the said gear-pinion is disengaged from the said rack-bar.

8. In a typewriting machine, the combination of a paper-carriage provided with a rack-bar, letter-spacing mechanism for controlling the movement of the carriage embracing a shaft provided with a gear-pinion adapted to be engaged with and disengaged from said rack-bar and with an escape-wheel, column-stop mechanism for releasing said carriage from the letter-spacing mechanism and arresting its movement at a desired point embracing a key-lever for operating said column-stop mechanism, and a spring-arm attached to said key-lever and provided with a brake-member in the form of a curved shoe adapted to engage the points of the teeth of said escape wheel.

9. In a typewriting machine, the combination of a shift-frame provided with a slotted bracket, a paper carriage having endwise movement on said shift-frame, said paper carriage being provided with a rack-bar, a letter spacing mechanism embracing an upright escape wheel shaft provided with a gear pinion and which is movable at its

upper end in the slot of said bracket to
shift the gear pinion into and out of mesh
with the rack-bar, column-stop mechanism
embracing a key-lever mounted on the shift-
5 frame, said key-lever having operative con-
nection with the escape-wheel shaft, and a
stop adjustably attached to said bracket for
limiting the movement of said escape wheel
shaft away from the rack-bar when the key-
10 lever is actuated.

In testimony, that we claim the foregoing
as our invention we affix our signatures in
the presence of two witnesses, this 15th day
of September A. D. 1908.

THERON L. KNAPP.
CLAYTON C. HARTING.

Witnesses:

A. J. MULLEN,
WM. H. O'BRIEN.