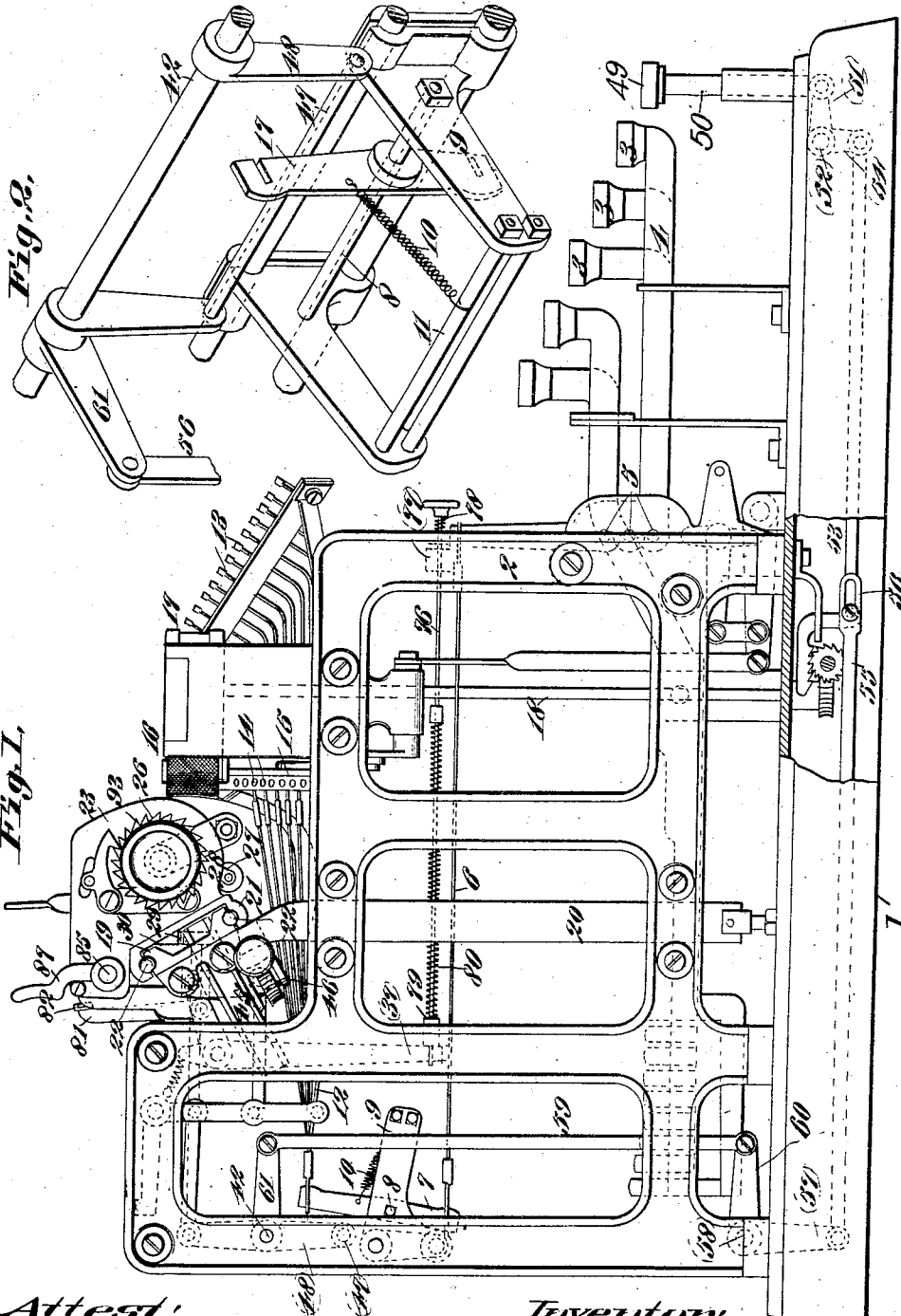


W. H. CLAYTON.
 TYPE WRITING MACHINE.
 APPLICATION FILED DEC. 6, 1906.

1,053,480.

Patented Feb. 18, 1913.

4 SHEETS—SHEET 1.



Attest:
 Charles Pickles,
 Ellis Swanson

Inventor:
 William H. Clayton
 by J. D. Rippey
 Atty.

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4 SHEETS—SHEET 2.

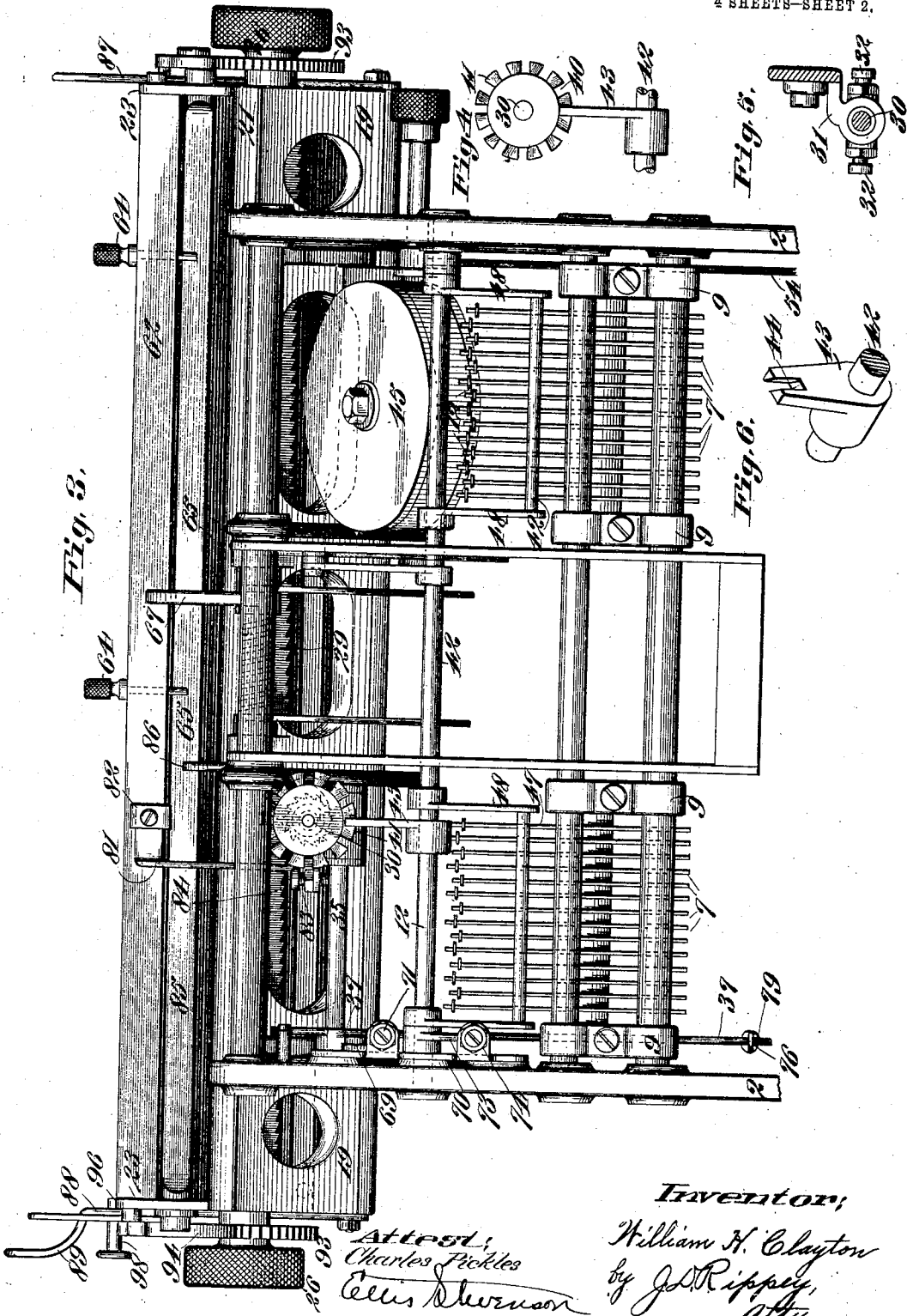


Fig. 5.

Fig. 4.

Fig. 6.

Fig. 7.

Fig. 8.

Inventor,
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 Atty.

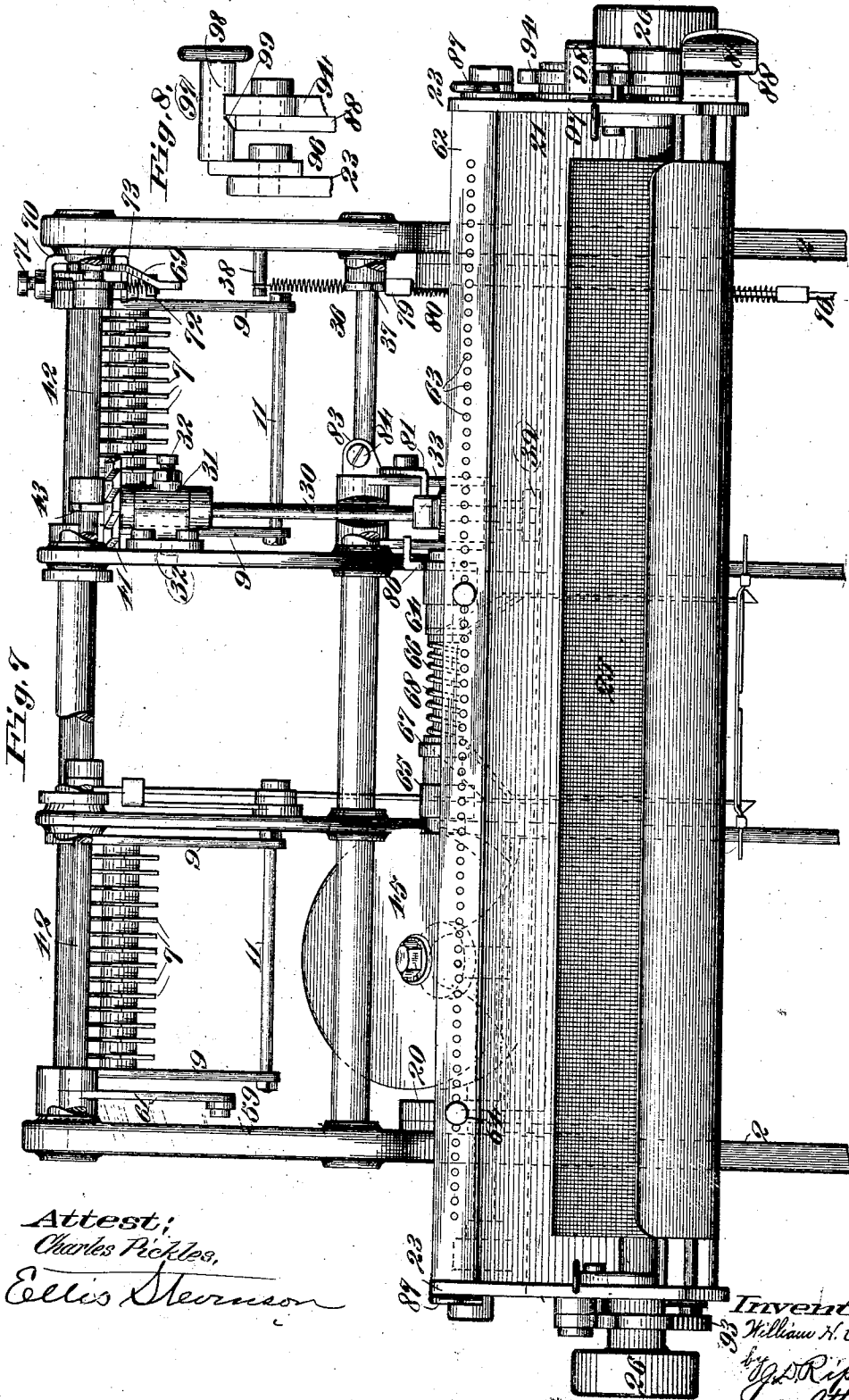
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 Charles Pickles
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4 SHEETS—SHEET 3.



Attest:
 Charles Pickles,
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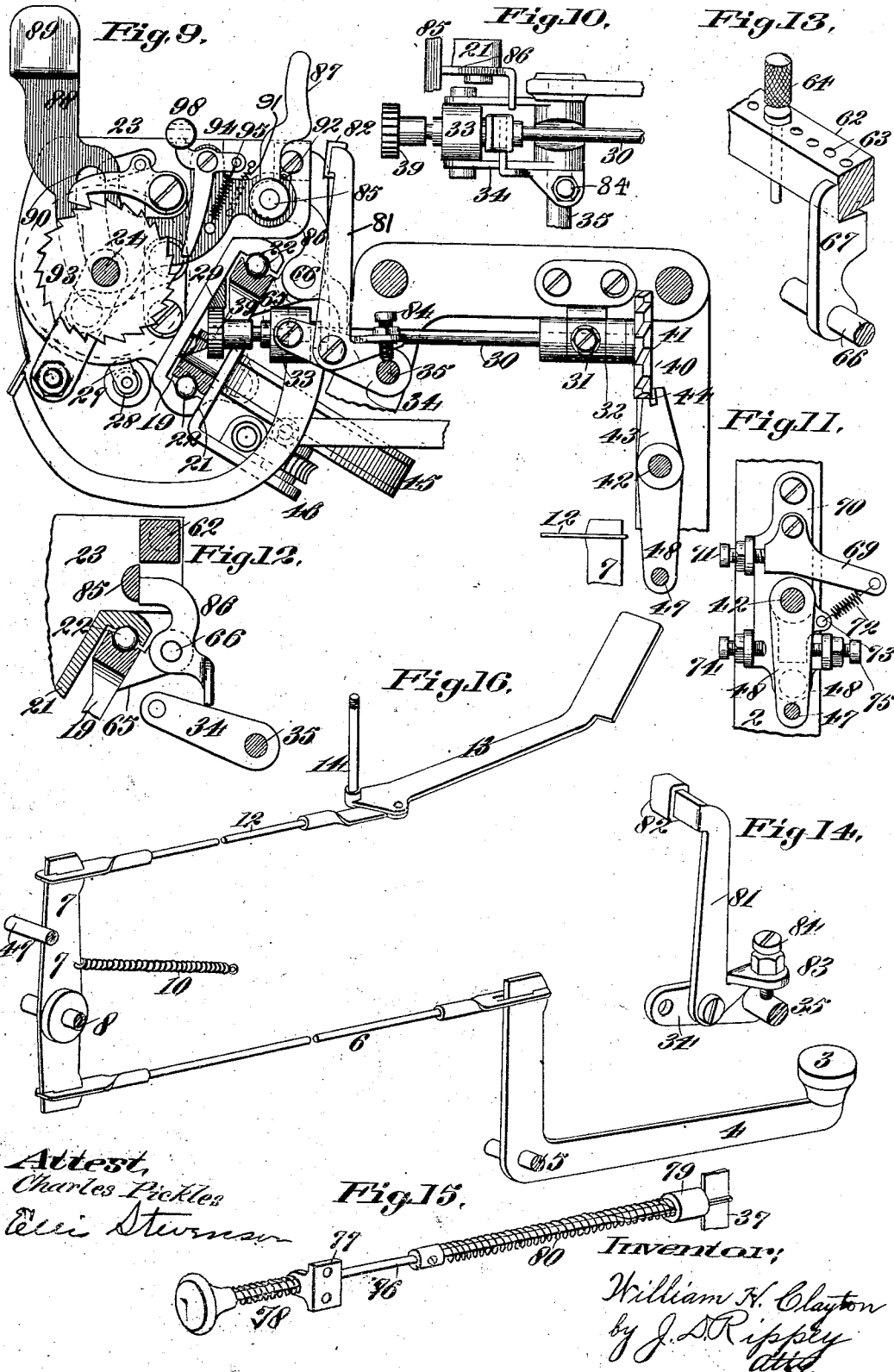
Inventor:
 William H. Clayton
 by J. R. Rippey
 Atty.

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4 SHEETS—SHEET 4.



Attest,
 Charles Pickles
 Elii Sturman

Fig. 15.

Inventor,
 William H. Clayton
 by J. R. Rippey
 atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. CLAYTON, OF POPLAR BLUFF, MISSOURI, ASSIGNOR TO DALTON ADDING MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

TYPE-WRITING MACHINE.

1,053,480.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Original application filed September 10, 1906, Serial No. 334,029. Divided and this application filed December 6, 1906. Serial No. 346,685.

To all whom it may concern:

Be it known that I, WILLIAM H. CLAYTON, a citizen of the United States, residing at Poplar Bluff, Butler county, Missouri, have invented a new and useful Type-Writing Machine, of which the following is a specification.

This invention relates to typewriters and more particularly to improvements in the construction, combination and arrangement of parts included in, relating to, and cooperating with, the platen and its carriage, the escapement mechanism, and carriage stop mechanism.

This application is divisional and a continuation of my former application for patent for a typewriting machine, filed September 10, 1906, Serial No. 334,029, and covers that part of the subject matter of said application known and classified as, "Carriages, carriage stop mechanism," which has been divided out of said former application.

The object of the invention is to improve the construction and operation of the carriage of typewriting machines generally and, in the present embodiment of my invention, the same as in my said application referred to, I have illustrated it in a machine known as a front strike typewriter, though it is obvious that it may be equally as well applied to other types of machines.

Another object of the invention is to produce in combination with the platen and the automatic letter spacing mechanism cooperating therewith, improved escapement and stop mechanism, and tabulating mechanism whereby the platen may be caused to move laterally the width of one or more column spaces, and including a device for restraining the platen so that it will not move or stop with too great speed or force, which would eventually damage some of the parts.

Other objects and advantages of my invention will appear from the following description, references being made to the accompanying drawings in which—

Figure 1 is a side elevation of a typewriting machine embodying my invention. Fig. 2 is a perspective view of one of the frames for supporting the levers acted on by the key-levers, one of which levers is shown in said frame, said view also showing the rock shaft which is controlled by said levers and

which comprises part of the escapement mechanism. Fig. 3 is a rear view of the upper portion of the machine. Fig. 4 illustrates a peculiarly toothed wheel included in the escapement, and also an escapement member cooperating with said wheel. Fig. 5 shows one of the bearings for the escapement shaft. Fig. 6 is a perspective view of the member co-acting with the escapement wheel to control the movement of the platen in letter spacing and word spacing. Fig. 7 is a plan view of the platen and its carriage and the rear portion of the machine, the key-lever links and type-bar links being omitted to avoid confusion. Fig. 8 shows a device for controlling a pawl which rotates the platen when the latter is moved laterally, as for column spacing. Fig. 9 is a sectional view of the platen carriage, and shows the escapement mechanism controlling the said carriage. Fig. 10 is a detail view of part of the escapement mechanism, and shows a swinging bearing supporting one end of the escapement shaft. Fig. 11 is a detail view of the devices which control the rock shaft that supports the escapement member cooperating with the peculiarly shaped escapement wheel. Fig. 12 is a sectional view of part of the platen carriage and shows a lever which is operable by a rack bar supported by said carriage effectively to release the escapement or stop mechanism from engagement with the platen carriage. Fig. 13 is a perspective view of a part of the platen carriage stop mechanism, included in the tabulating mechanism. Fig. 14 is a perspective view of a brake, or restraining device, which cooperates with the tabulating, or carriage stop mechanism. Fig. 15 shows the device which acts to release escapement from the platen carriage to permit lateral movement of the platen for column spacing or tabulating. Fig. 16 is a perspective diagrammatic illustration of a train of printing parts and illustrates the same in relation to a portion of the escapement or carriage stop mechanism.

The base 1 sustains rigidly the two side frames 2. The base extends forward a considerable distance beyond the side frames and the keys 3 are disposed in a conventional or preferred arrangement over the front part of the base. The keys 3 are the

typewriter printing keys and, through the medium of trains of mechanism leading therefrom, their operation results in the operation of the type-bars to record or print. In the embodiment illustrated there are three rows of typewriter keys and their levers 4 are pivoted upon transverse rods 5. Said levers are angular in form and have arms extending vertically from their pivots 5. From the upper end of each of said arms a link 6 (Figs. 1 and 16) leads to a cooperating lever 7. There are two groups of the levers 7; one group being near each side of the machine at the rear end thereof. Said levers 7 are mounted upon rods 8 supported in frames 9, and the upper ends of said levers are actuated forwardly by springs 10 which connect said levers with rods 11 in said frames 9. It is obvious that said springs will uphold the keys 3, and that when said keys are operated for writing purposes the levers 7 are operated in opposition to their springs, and that said springs, upon release of the keys, respectively, act to restore the entire train of devices to idle or rest position. The upper ends of the levers 7 are connected, by means of links 12 with type-bars 13 which are mounted on spindles 14 supported in frames 15. Said type-bars are mounted so that when operated they will record on the front side of the platen, thereby producing records that are visible to the operator. A ribbon 16 winds upon spools within spool cases 17, said spools being on the upper ends of shafts 18 which project through the base 1 of the machine (Fig. 1). These parts, and their combination and arrangement are fully illustrated and described in my other application referred to, and inasmuch as they do not constitute the subject matter of the claims herein, except in general terms and broadly, further description or illustration thereof in this present instance is considered unnecessary.

A carriage support 19 is attached to the upper ends of two standards 20 extending from the base of the machine, and a platen carriage 21 is supported thereon. Balls 22 are located in grooves in said support and carriage and constitute the bearings of the carriage. A plate 23 is at each end of the carriage and a shaft 24 is journaled in bearings in said plates. A platen 25, of usual or other suitable construction is attached on said shaft. A knob 26 is on each end of said shaft for manual engagement for purposes of moving the platen or rotating it. This platen has its front side visible to the operator and the ribbon 16 extends crosswise of the machine just below the horizontal plane of the axis of the platen. When the keys 3 are depressed the ribbon is raised slightly and the type-bars strike the same and thereby record upon paper held by the

platen, the line of record being, or approximately at, the horizontal plane of the axis of the platen. Two links 27 are suspended from the platen shaft 24, and a paper-feed roller 28 is carried by said links and bears against the platen 25 so that if paper be started between said rollers it will be carried on through by rotation of the platen.

The rear side of the platen carriage has a rack 29, composed of ratchet teeth. A shaft 30 is supported in an adjustable bearing formed with a supporting part 31 and two screws 32 operating in lateral holes and acting as pivots for the shaft while permitting said shaft to rotate. The front end of said shaft 30 is in a bearing 33 carried by two arms 34 attached to a rock shaft 35. A spring 36 connects an arm 37 on the rock shaft with a projection 38 on one of the frames of the machine and acts to hold the bearing 33 upward. A ratchet pinion 39 is on the front of the shaft 30 and meshes with the rack 29 when the front end of said shaft is held up. A wheel 40 is on the rear end of the shaft 30 and has a series of teeth 41 on its periphery, which teeth are substantially diamond shaped in cross section or end view. A rock shaft 42 is supported by the frames 2 below the wheel 40 and has an arm 43 thereon, said arm having a notch 44 in its upper end. The walls of the notch and the front and rear sides of the teeth are parallel. The end of the arm 43 extends between the teeth on the wheel, and when the shaft 42 is rocked said arm permits the wheel to rotate step by step, one tooth at a time; the teeth, passing, respectively through the notch. The passing of one tooth through the notch acts on the arm 43 and moves it toward its initial position and, before the next following tooth starts into the notch, the end of the arm is in such position that such tooth will be engaged therewith and not enter the notch, thereby stopping rotation of the wheel and shaft. The rotating of the shaft permits the platen to be moved step by step leftward relative to the operator for letter and word spacing. To move the platen in this manner a motor 45 of known construction and adaptation is utilized, said motor being supported on a bracket 46 attached to the carriage support. Behind the upper ends of each group of levers 7 is a rod 47 supported by arms 48, attached to the rock shaft 42. From the arrangement of these parts it is obvious that when any of the typewriter keys is depressed the shaft 42 will be rocked and the escapement device operated, so that the platen may move one space leftward.

The arrangement of the parts comprising the escapement relative to the levers 7 and cooperating parts is such that the platen will be moved only after the type has struck and rebounded so that the printing will be

clear and distinct, and not blurred or marred as would be the case were the platen to move with the type held against the ribbon. To operate the escapement and permit the platen to move for word spacing and the like, special mechanism is provided. In front of the keys 3 a space bar 49 is carried on stems 50 operating through the base and connected to levers 51 attached to a shaft 52. A link 53 is connected to an arm 54 on the shaft 52 and leads to a second link 55 to which it is connected by pin-and-slot connection 56, so that depression of the spacing bar will cause both links to be moved backward, but permitting the link 55 to be moved independently of the spacing bar. The link 55 connects to an arm 57 on a rock shaft 58 at the rear end of the machine. A link 59 connects an arm 60 attached to the rock shaft 58 with an arm 61 rigid on the rock shaft 42 whereby the escapement is operated. From the foregoing it is obvious that operation of the spacing bar will cause the escapement controlling the platen to operate and thereby permit the platen to be moved step by step laterally. The plates 23 which carry the platen also support a bar 62 which has a series of holes 63 adapted to receive the stop pins 64 which are removable. Bearings 65 are rigid with the carriage support 19 and a rod or shaft 66 is mounted therein. An arm 67 is mounted on the shaft 66 and is actuated forward against the bar 62 by a spring 68 encircling the shaft. Said arm 67 has a projection extending under the bar 62 against which one of the pins 64 will strike and thereby stop the platen when the latter has moved the required distance. These pins may be adjusted to limit right and left movement of the platen and, by proper adjustment, will stop the platen in any desired positions.

Near one end of the shaft 42 (Figs. 3, 7 and 11) is a lever 69 pivotally supported by a bracket 70 attached to one of the frames 2, and adjustably sustained by a screw 71 operating in an arm of said bracket. A spring 72 connects said lever with an arm 73 attached to the shaft 42 which controls the escapement. The arm 72 is between two screws, one of which is indicated by 74 and the other by 75, adjustable in arms of the bracket 70. By adjusting the screws 74 and 75, the scope of swing of the lever 48 and the rod 47 can be regulated, and the tension exerted by the spring 72 can be increased or reduced, as desired, by means of the screw 71.

Near one side of the machine a tabulating key is located which key is operable to release the escapement from the platen carriage and thereby permit the platen to shift at a single movement any desired distance leftward relative to the operator facing the machine. Said key comprises a rod 76

(Figs. 1 and 15) supported at its front end in a bracket 77 attached to the frame 2 and connected at its rear end to the lower end of the lever 37 which is attached to the rock shaft 35. A spring 78 encircles said rod between its head and the bracket 77 and assists in actuating the rod forward and, through the lever 37, in holding the pinion 39 in mesh with the rack 29. A slidable collar 79 is on the end of the rod 76 and against the lever 37. A spring 80 encircles the rod in front of the collar and behind another collar, and thereby makes the connection between the rod 76 and the lever 37 yielding but of sufficient tension that when the rod is pushed rearward it will oscillate the lever and thereby rock the shaft 35 and so disconnect the pinion 39 from the rack 29. Thereupon the platen will be drawn leftward and to prevent too rapid movement and sudden stops a brake device is employed to restrain the platen so that it will move quietly and easily until stopped by the pin 64 striking the arm 67, or release of the rod 76. This brake device consists of a lever 81 pivoted to one of the arms 34 and provided with a friction part or brake shoe 82 on its upper end adjacent to the bar 62 in the platen carriage or frame. An arm 83 on said lever extends over the shaft 35 so that when the arms 34 are lowered said arm 83 will engage against the said shaft 35 and thereby force the part 82 against the bar 62. The frictional contact of the part 82 and the bar 62 will cause the platen to move slowly to position and will prevent any sudden jerks or stops. A screw 84 operates through the arm 83 and against the shaft 35 and affords means for adjusting the brake to conform to different degrees of pressure as required.

Below the bar 62 a cam bar or shaft 85 is mounted in bearings in the platen carriage and plates 23. A lever 86 is mounted on the shaft 66 and has its end close against the bar 85 and its lower end extends over one of the arms 34 by which the bearing for the shaft 30 is supported. Rotation of the bar 85 operates the lever 86 and pushes down the arms 34 and thereby disconnects the pinion 39 from the rack 29 and permits the platen to move freely in either direction. A lever 87 is secured to each end of the bar 85 and affords means for manual engagement to turn the bar 85 and thereby operate the lever 86. Such operation permits the platen to be moved manually in either direction and to any desired position, in which it may be stopped by releasing the lever 87, whereupon the spring 68 will restore the lever to idle position and permit the escapement again to couple up.

Manually operable mechanism for moving the platen, and other mechanism cooperating with the platen for adjusting the

same, are supported by the plates 23. At the right of the machine relative to the operator facing the machine, an angular lever 88 having the end of one of its arms pivoted to the bar 85 and the other arm projecting vertically and provided with a handhold 89. An arcuate slot 90 in said lever receives the platen shaft 24 (Fig. 9); and permits oscillation of the lever without obstruction from the shaft. Said lever is sustained by a spring 91. A pin 92 on the lever 88 projects behind the lever 87, so that when the adjacent lever 88 is lowered the lever 87 will be operated, which results in release of the escapement from the platen by means of the lever 86 controlled by the bar 85 to which said lever 87 is attached. This also operates the brake to avoid the necessity of manual restraint when the carriage is moved in one direction by the motor so that the carriage will move gently to its new position when so moved, and tends to prevent too sudden movement in the opposite direction. In the one instance the release of the carriage causes the brake to retard the movement thereof by the motor and avoids the necessity of manual resistance, and in the other instance the brake acts to resist the natural tendency to jerk the carriage. It is obvious, therefore, that by operating the lever 88 the platen may be guided manually in either direction and to any desired position. At each end of the platen shaft 24 a ratchet wheel 93 is attached the teeth of which wheels are arranged suitable for line "single spacing". The lever 88 carries a T-shaped pawl 94 the lower end of which is actuated forwardly toward the adjacent ratchet wheel 93 by a spring 95. The adjacent plate 23 supports a member 96 which has an arm 97 projecting over the top of the pawl 94. A sleeve 98 is slidably mounted on the arm 97 and in the under side of said sleeve is a notch 99 (Fig. 8). In idle position when adjusted for "double spacing" the front arm of the pawl 94 engages against the sleeve within the notch and in such position the lower end of pawl is held away from the ratchet wheel 93 so that the platen can rotate freely in either direction without obstruction from the pawl. When the lever 88 is engaged and lowered the pawl 94 engages with the wheel 93 and rotates the platen to feed the paper a distance equivalent to two teeth or spaces and adjusts it for "double space" printing. The lever 88 is intended to be engaged after each line of printing to move the platen laterally for the next line and this rotation of the platen for line spacing is thus automatically accomplished. If the sleeve 98 be moved endwise the pawl 94 will be held farther back and will engage with one tooth lower on the ratchet wheel 93 when the lever 88 is operated and, upon operation of

said lever 88, will rotate the platen one tooth or space, and thus feed the paper in "single space" printing.

While this invention is herein illustrated in connection with a front strike typewriter, it is obvious that it may, with great advantage, be applied to other types or species of machines. I am aware that there may be variations and alterations in the arrangement and combination of the various features described, and in the manner of their cooperation, without in the least departing from the spirit and scope of my invention. In view of such possible variation and alteration, I do not restrict myself to identical features of arrangement, nor combination of parts, but

What I claim and desire to secure by Letters Patent is—

1. In a typewriting machine, the combination of a carriage, a rack carried thereby, a pivotally mounted shaft, an escapement for rotating the shaft step by step, a pinion carried by the shaft and adapted for engagement with a rack, a rocker pivotally connected to the shaft, a controlling device for moving the rocker, a friction surface on the carriage, a brake lever pivoted to the rocker, and an adjustable device interposed between the brake lever and an abutment, whereby when the rocker is shifted to release the pinion from the rack, the brake lever is engaged with the friction surface on the carriage.
2. In a typewriting machine, the combination of a carriage, a rack carried thereby, an escapement mechanism having a shiftably mounted pinion adapted to engage the rack, a support for said pinion, means controlling the shifting of the pinion, whereby it may be released from the rack, and a carriage checking device controlled and actuated by said support and being thereby thrown into operation on the release of the pinion from the rack.
3. In a typewriting machine, the combination of a carriage, a rack carried thereby, an escapement mechanism having a shiftably mounted pinion adapted to engage the rack, a support for said pinion, means controlling the shifting of the pinion, whereby it may be released from the rack, a friction surface on the carriage, and a friction brake controlled and actuated by said support and being thereby engaged with the friction surface when the pinion is released from the rack.
4. In a typewriting machine, the combination of a carriage, a rack carried thereby, an escapement mechanism having a shiftably mounted pinion adapted to engage the rack, a support for said pinion, means in said carriage controlling the shifting of the pinion, whereby it may be released from the rack in any position of the carriage, a friction

tion surface on the carriage, a brake, and means actuated by said support for throwing the brake into engagement with the friction surface when the pinion is released from the rack.

5. In a typewriting machine, the combination of a carriage, a rack carried thereby, a pivotally mounted shaft, an escapement for rotating the shaft step by step, a pinion carried by the shaft and adapted for engagement with the rack, a rocker pivotally connected to and supporting the shaft, a controlling device for moving the rocker, a friction surface on the carriage, and a brake supported by the rocker and operated by the movement of the rocker on the release of the pinion from the rack effectively to engage the friction surface.

6. In a typewriting machine, the combination of a carriage, a rack carried by said carriage, a shaft, a pinion on said shaft, a rocker arranged to support said shaft and thereby hold said pinion in mesh with said rack, an escapement for rotating said shaft step by step, a friction surface on the carriage, a brake lever pivoted to the rocker, an abutment for said lever whereby, when said rocker is moved, said lever will be pressed against said friction surface, and a lever in said carriage operable to move said rocker a distance to disengage said pinion from said rack and to press said brake lever against said friction surface, substantially as specified.

7. In a typewriting machine, the combination of a carriage, a rack carried by said carriage, a shaft, a pinion on said shaft, a rocker supporting said shaft and thereby holding said pinion in mesh with said rack, an escapement for rotating said shaft step by step, a friction surface on the carriage, a brake lever pivoted on said rocker, an abutment for said lever whereby, when said rocker is moved, the lever will be pressed against said friction surface, a lever for moving said rocker, and a key connected to said last-named lever whereby said rocker may be moved to disengage said pinion from said rack and to press said brake lever against said friction surface, substantially as specified.

8. In a typewriting machine, the combination of a carriage, a rack carried by said carriage, a shaft, a pinion on said shaft, a rocker supporting said shaft and thereby holding said pinion in mesh with said rack, an escapement for rotating said shaft step by step, a friction surface on the carriage, a brake lever pivoted on said rocker, an abutment for said lever whereby, when said rocker is moved, the lever will be pressed against said friction surface, a lever for moving said rocker, and a key connected to said last-named lever whereby said rocker

may be moved to disengage said pinion from said rack and to press said brake lever against said friction surface, and a spring for actuating and retaining said key in idle position, substantially as specified.

9. In a typewriting machine, the combination of a carriage, a rack carried by said carriage, an escapement mechanism having a shiftably mounted pinion adapted to engage said rack, a support for said pinion, a spring for actuating said pinion into engagement with said rack, means controlling the shifting of the pinion whereby said pinion may be released from said rack, a friction surface on the carriage, a brake, and means actuated by said support for throwing the brake into engagement with said friction surface when said pinion is released from said rack, substantially as specified.

10. In a typewriting machine, the combination of a carriage, a rack in said carriage, an escapement mechanism having a shiftably mounted pinion adapted to engage the rack, a support for said pinion, means actuating said pinion into engagement with said rack, means in the carriage for controlling the shifting of the pinion to release said pinion from said rack, a friction surface on the carriage, a brake, and means actuated by said support for throwing the brake into engagement with the friction surface when the pinion is released from said rack, substantially as specified.

11. In a typewriting machine, the combination of a carriage, a rack carried thereby, a pivotally mounted shaft, an escapement for rotating the shaft step by step, a pinion carried by the shaft and adapted for engagement with said rack, a pivoted rocker supporting said shaft, a lever for moving the rocker, a friction surface on the carriage, a brake supported by the rocker and operated by the movement of the rocker on the release of the pinion from the rack, effectively to engage the friction surface, and means for holding said brake in different positions when said brake is idle, substantially as specified.

12. In a typewriting machine, the combination of a carriage, a rack carried thereby, a pivotally mounted shaft, an escapement and motor for rotating said shaft step by step, a pinion carried by said shaft and adapted for engagement with said rack, a pivoted rocker supporting said shaft, a spring actuating said pinion into engagement with said rack, a lever mounted in the carriage, means whereby said lever may move said rocker and disengage said pinion from said rack, a friction surface on the carriage, and a brake supported by said rocker and operated by the movement of said

rocker on the release of the pinion from the rack effectively to engage said friction surface, substantially as specified.

13. In a typewriting machine, the combination of a carriage, a rack carried by said carriage, a shaft, a pinion on said shaft, a rock shaft, a rocker carried by said rock shaft and supporting said first-named shaft and thereby holding said pinion in mesh with said rack, an escapement and motor for rotating said first-named shaft step by step, a friction surface on the carriage, a brake lever pivoted on said rocker, means whereby said brake lever will be pressed against said friction surface when said rocker is moved to release said pinion from said rack, a lever for moving said rocker to release said pinion from said rack, and a key connected to said last-named lever whereby said rocker may be moved to disengage said pinion from said rack and to press said brake lever against said friction surface, substantially as specified.

14. In a typewriting machine, the combination of a carriage, a motor for moving said carriage, a rack carried by said carriage, a shaft, a pinion on said shaft, a rock shaft, a rocker carried by said rock shaft and supporting said first-named shaft and thereby holding said pinion in mesh with said rack, a spring controlling said rock shaft to hold said pinion in mesh with said rack, an escapement for permitting said motor to rotate said first-named shaft step by step, a friction surface on the carriage, a brake lever pivoted on said rocker, a lever

for moving said rocker to release said pinion from said rack, a key connected to said last-named lever whereby said rocker may be moved and said pinion disengaged from said rack, and an abutment for said brake lever whereby, when said pinion is disengaged from said rack, said brake lever will be pressed against said friction surface, substantially as specified.

15. In a typewriting machine, the combination of a carriage, a rack carried thereby, a shaft, a pinion on said shaft, a rocker supporting said pinion in mesh with said rack, a spring actuating said rocker to hold said pinion in mesh with said rack, an escapement and motor for rotating said shaft step by step, a friction surface on said carriage, a brake lever pivoted on said rocker, a lever for moving said rocker, a key connected to said last-named lever whereby said record may be moved to disengage said pinion from said rack and to press said brake lever against said friction surface, and an adjustable abutment for said brake lever whereby said brake lever will be pressed against said friction surface when said rocker is moved, substantially as specified.

In testimony whereof, I hereunto affix my signature to this specification this 19th day of November, 1906, in the presence of two witnesses.

WILLIAM H. CLAYTON. [L. s.]

Witnesses:

OTTO A. MCKINNEY,
NETTIE WINSTON.