J. H. BARR.

TYPE WRITING MACHINE.

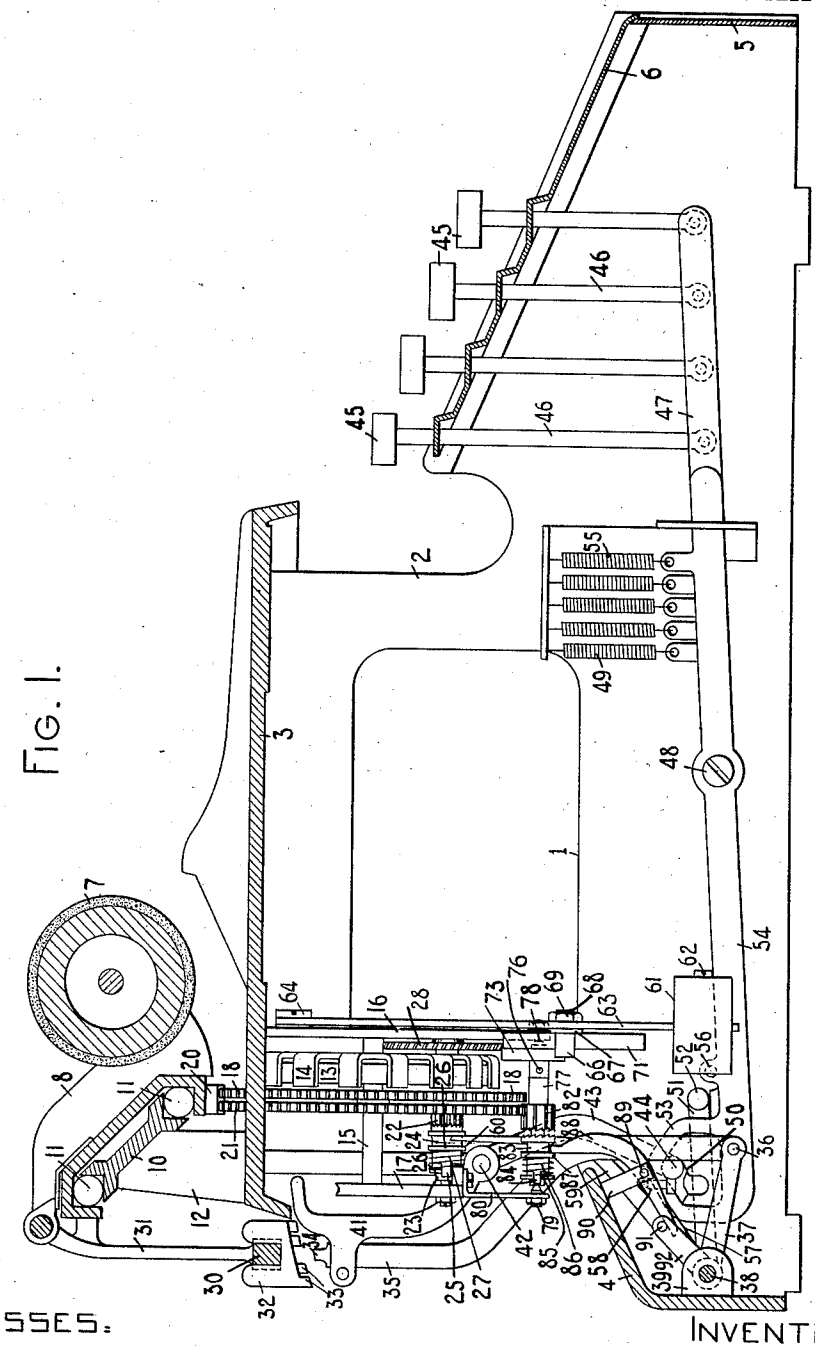
APPLICATION FILED AUG. 26, 1911.

1,016,540.

Patented Feb. 6, 1912.

4 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

M. F. Hammeke

M. W. Pool

INVENTOR:

John H. Barr

By Jacob Feldt

HIS ATTORNEY

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

J. H. BARR.

TYPE WRITING MACHINE.

APPLICATION FILED AUG. 26, 1911.

1,016,540.

Patented Feb. 6, 1912.

4 SHEETS—SHEET 2.

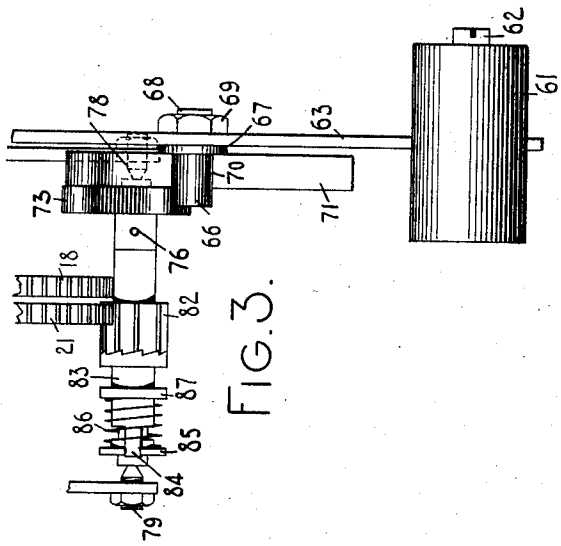


FIG. 3.

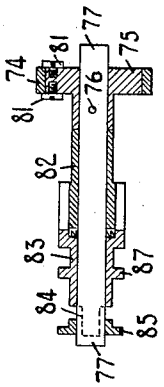


FIG. 4.

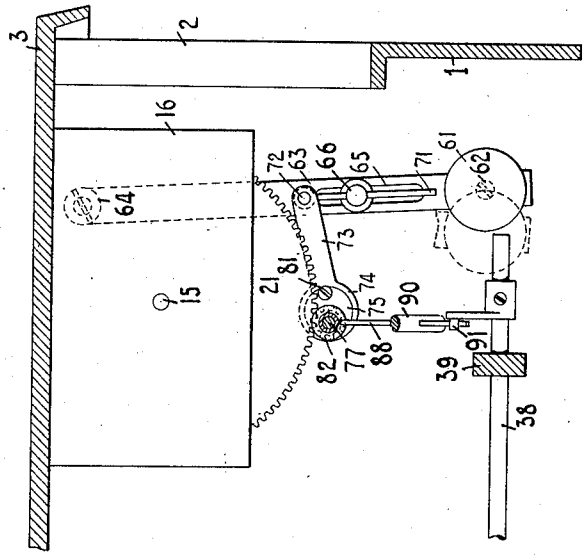


FIG. 2.

WITNESSES:

M. F. Hanmeker

M. W. Poole

INVENTOR:

John H. Barr

By Jacob Fiebel

HIS ATTORNEY

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

J. H. BARR.

TYPE WRITING MACHINE.

APPLICATION FILED AUG. 26, 1911.

1,016,540.

Patented Feb. 6, 1912.

4 SHEETS—SHEET 3.

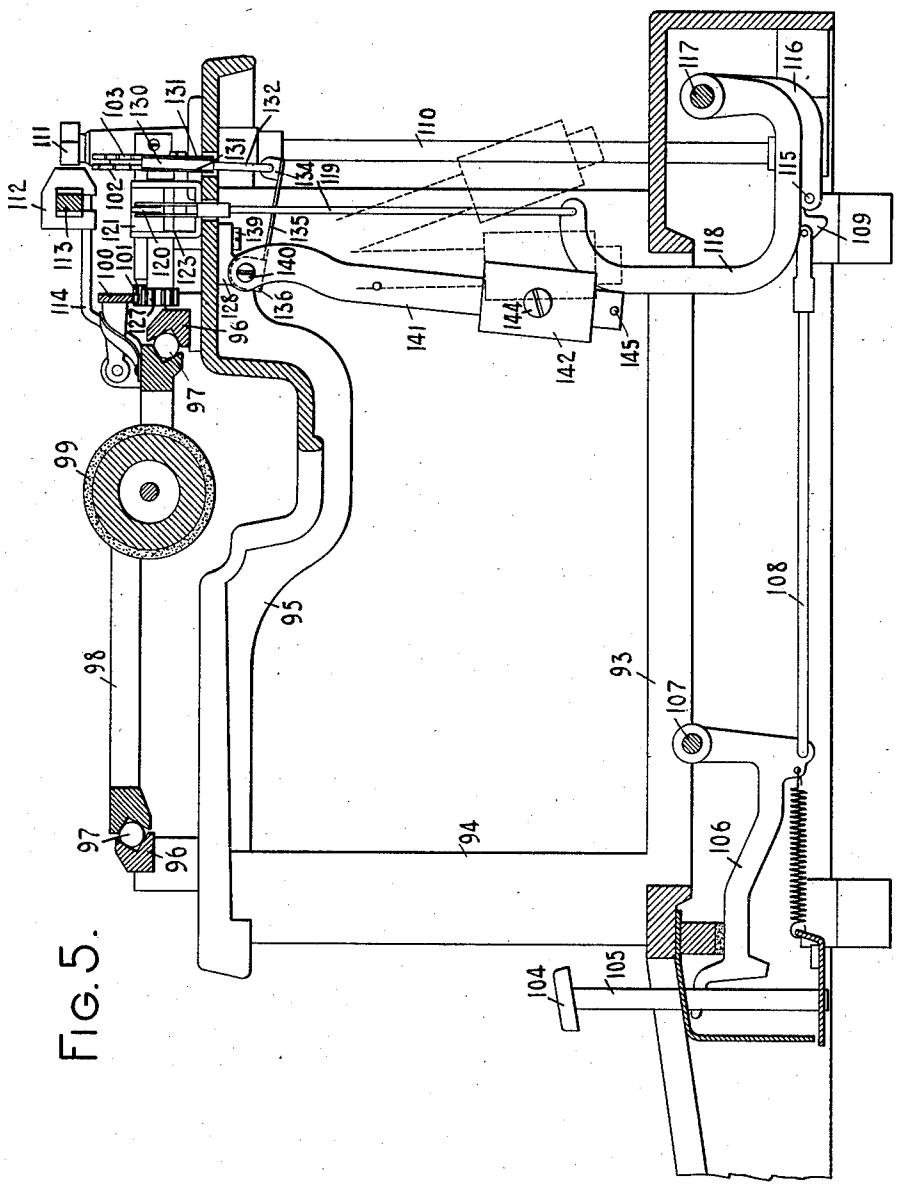


FIG. 5.

WITNESSES:

M. F. Hannweber

M. W. Poole

INVENTOR:

John H. Barr

By James Tebbe

HIS ATTORNEY

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

J. H. BARR.

TYPE WRITING MACHINE.

APPLICATION FILED AUG. 26, 1911.

1,016,540.

Patented Feb. 6, 1912.

4 SHEETS—SHEET 4.

FIG. 6.

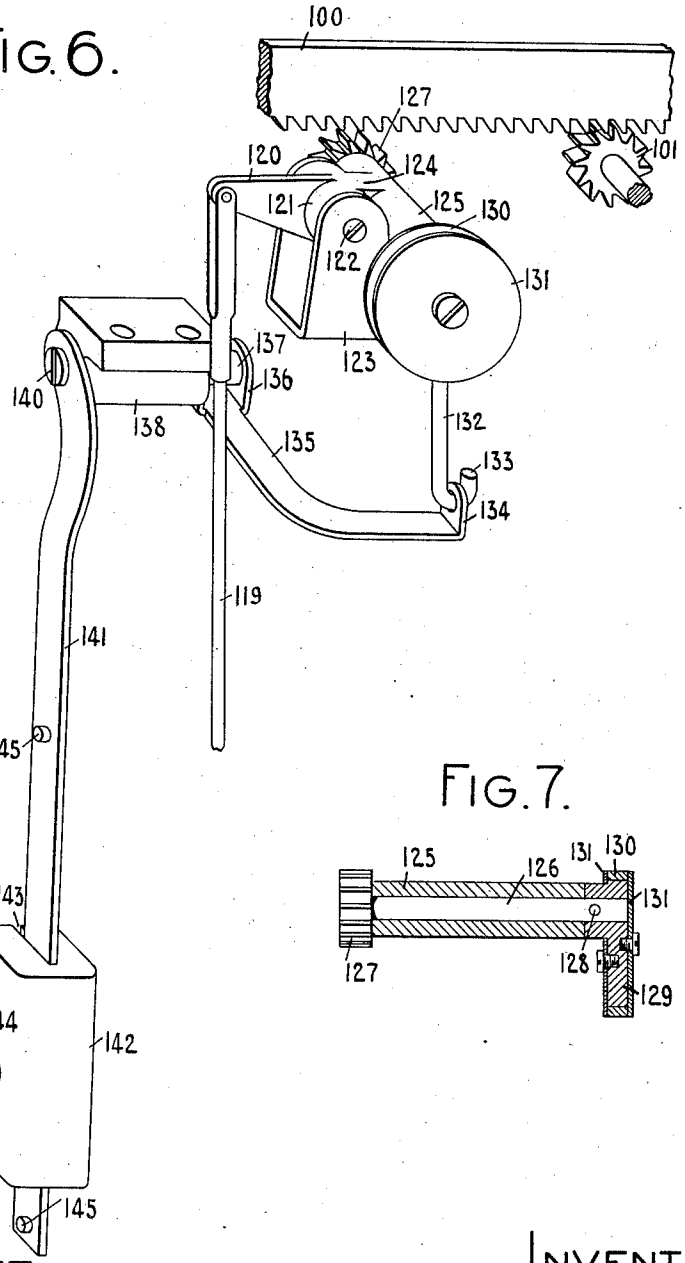


FIG. 7.

WITNESSES:

M. F. Hannwacker

M. W. Pool

INVENTOR:

John H. Barr

By Jacob Felbel

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN H. BARR, OF SYRACUSE, NEW YORK, ASSIGNOR TO UNION TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

1,016,540. Specification of Letters Patent. Patented Feb. 6, 1912.

Application filed August 26, 1911. Serial No. 646,164.

To all whom it may concern:

Be it known that I, JOHN H. BARR, citizen of the United States, and resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to retarding mechanism for typewriting machines and has for its main object to provide improved means for controlling and retarding the motion of the carriage when said carriage is released from its step-by-step feed devices as for example during tabulating operations.

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 the accompanying drawings which illustrate two forms of my invention, Figure 1 is a vertical front to rear sectional view of a No. 10 Smith Premier typewriting machine embodying my invention, parts of the machine being omitted. Fig. 2 is a fragmentary rear elevation partly in section illustrating the retarding mechanism as applied to said machine. Fig. 3 is a fragmentary elevation viewed from the left of the retarding mechanism. Fig. 4 is a longitudinal sectional view illustrating certain of the connecting devices for the retarding mechanism. Fig. 5 is a fragmentary vertical front-to-rear sectional view of a No. 10 Remington typewriting machine embodying a modified form of my invention. Fig. 6 is a perspective view of the retarding mechanism shown in Fig. 5. Fig. 7 is a longitudinal sectional view of the shaft on which the eccentric and releasing pinion of the Fig. 5 construction are mounted.

Referring to the first form of the invention, Fig. 1 shows the main frame of the machine comprising side plates 1 provided with integral posts 2 supporting a top plate 3. The side plates are connected at the rear by a back plate 4 and at the front by a front plate 5 and also by a keyboard plate 6. The printing instrumentalities are not shown herein but may be of the usual or any other suitable style, the types being adapted to strike against the front face of a platen 7 mounted on a carriage 8, said carriage being supported on a stationary rail 10 by anti-friction balls 11 which run in race-ways formed in the rail 10 and in the carriage. The rail 10 is supported by standards 12 rising from the top plate 3. The carriage is power driven being fed from right to left by a driving spring 13 coiled within a spring drum 14 which is mounted on a shaft 15 journaled at its ends in frame plates 16 and 17 depending from the top plate 3. The spring 13 is connected with a driving gear 18 which projects through a slot in the top plate and meshes with a feed rack 20 mounted at the under side of the carriage 8. A second gear wheel 21 is loosely mounted on the shaft 15 behind the gear 18 and said gear 21 meshes with a pinion 22 mounted on a shaft 23 journaled at its ends in the frame plates 16 and 17, said pinion being mounted to turn freely on the shaft but being held against motion endwise thereof. The rear face of the pinion 22 is formed with ratchet clutch teeth which mesh with corresponding teeth on a clutch member 24 slidably mounted on the shaft 23, said member 24 being provided with splines 25 which engage in notches formed in a flange 26 rigid on the shaft 23. The clutch member 24 is normally held in engagement with the clutch teeth of the gear 22 by a coiled spring 27. Suitable escapement mechanism such as that found in the Smith Premier machine and shown in the patent to A. T. Brown, No. 985,506, granted February 28th, 1811, controlled by the usual printing keys and space key, may be connected with the shaft 23 by a spiral gear wheel 28 rigid on said shaft. It will be understood that when the clutch member 24 is in normal position as shown in Fig. 1 the carriage 8 is under control of the escapement and that the carriage may be released by moving the clutch member 24 toward the rear against the tension of the spring 27.

The tabulating mechanism illustrated herein, comprises a stop bar 30 supported by arms 31 depending from the carriage, said stop bar being slotted at letter space intervals for the reception of adjustable column stop members 32. Each stop member 32 has a lug 33 projecting downward, the lugs being located in different fore and aft positions and being adapted to coöperate with a key controlled stop 34 at the upper end of an upright bar 35 pivoted at its lower end at 36 to an arm 37 fixed to and projecting forward from a transverse rock

shaft 38 pivoted in brackets 39 projecting from the frame plate 4. The bar 35 is guided in a frame 41 pivoted at 42 and provided with an arm 43 terminating in a horizontal extension 44. The stop 34 is controlled by column keys 45, four of which are shown, mounted on stems 46 connected with levers 47 pivoted at 48 and each provided with a restoring spring 49. Each lever 47 at its rear is provided with a cam 50 coöperative with the extension 44, the cams being differently shaped so as to move the extension 44 variably and thereby rock the frame 41 different extents on its pivot 42 to move the stop 34 to and fro transversely of the machine variable extents and so that when thereafter elevated or raised independently of the frame 41 said stop 34 will coöperate with a predetermined stop lug 33. The means for independently elevating the stop 34 comprise an arm 51 fixed to the rock shaft 38 at its right-hand end and extending forward, terminating in an extension 52 which overlies and is transverse of the levers 47 and is adapted to be elevated thereby. The upward movement of said extension rocks the shaft 38 and causes the arm 37 to raise the arm 35 and stop 34. The mechanism is timed so that the stop 34 is not raised until after the frame 41 has positioned it transversely as above described. A double cam 53 coöperates with the extension 44 to control the frame 41, said cam being integral with a lever 54 pivoted at 48 and provided with a restoring spring 55. The lever 54 is provided with a pin 56 which extends transverse of the four levers 47 and is adapted to be actuated thereby. The carriage is released for tabulating purposes when the tabulating keys are operated, by devices comprising an arm 57 fixed to the rock shaft 38 and acting through a rod 58 on an arm 59 which is adapted to engage a flange 60 on the member 24 to move said member rearward against its spring, thereby disconnecting it from the pinion 22. The details of the tabulating mechanism will be found more fully described and explained in the patent to A. T. Brown No. 937,414, granted October 19, 1909.

Generally speaking, my novel retarding mechanism comprises an oscillatory or vibratory device, member or pendulum which is normally disconnected from the carriage but is adapted to be automatically connected therewith through yielding devices when the carriage is released at the tabulating operation. By providing a yielding connection between the oscillatory member and the carriage the noise and undue jarring which have heretofore rendered this class of retarders objectionable are practically eliminated. Further the retarder comprises an eccentric disk and a coöperating strap which generate friction for retarding purposes more smoothly and effectively than has heretofore been done in this class of devices.

Referring first to the form of the invention shown in Figs. 1 to 4, the retarding mechanism comprises a weight or bob 61 which is adjustably secured by a screw 62 to the lower end of an arm or bar 63 pivoted at 64 to the frame plate 16. The arm 63 is formed with a slot or opening 65 in which is an adjustable member or pin 66 provided with a flange 67 and a reduced threaded end 68 which passes through the slot 65 and receives a nut 69, the nut being at the opposite side of the bar from the flange 67 and coöperating therewith to clamp the member or pin 66 to the bar 63 after said pin has been adjusted at the desired point lengthwise of said bar. The pin is provided with a slot 70 through which passes a flexible member or spring tongue 71 pivotally connected at its upper end at 72 with the outer end of the arm 73 of an eccentric strap, said strap further comprising a circular strap portion proper or eye 74 integral with the arm 73 and coöperating with an eccentric disk 75, pinned at 76 to a shaft 77 extending transversely of the gear 21 and below the same. The forward end of the shaft 77 bears on a screw pivot 78 supported on an extension of the frame plate 16, while the rear end of said shaft bears on a screw pivot 79 which is supported on a bracket 80 secured to the frame plate 17. The eccentric strap is prevented from becoming accidentally detached from the disk 75 by headed screws 81 secured to the disk and having their heads overlapping the sides of the strap as shown in Fig. 4. The disk 75 is eccentrically mounted on the shaft 77 as clearly appears in Fig. 2 and the throw of the eccentric is such as to cause a vibration of the vibratory device or pendulum 61, 63 from the full line to the dotted line position in Fig. 2. Loosely mounted on the shaft 77 behind the eccentric disk is a pinion 82 which constantly meshes with the loose gear 21, said pinion like the pinion 22 being provided at its rear face with clutch teeth which are adapted to coöperate with corresponding clutch teeth formed at the front of a member 83, said member being slidably mounted on the shaft 77 but being compelled to rotate with said shaft by devices which comprise splines 84 integral with the member 83 and engaging notches in a flange 85 rigid on the shaft 77. A spring 86 coiled around the member 83 and confined between a flange 87 thereon and the flange 85, tends constantly to urge the member 83 forward into clutching engagement with the pinion 82. Normally, however, the member 83 is maintained separated from the pinion 82 as shown in Fig. 1 by a lever 88 pivoted at 89 to a support 90 on the frame bar 4. The upper end of

said lever 88 coöperates with the flange 87 while the lower end of said lever is engaged by a pin 91 projecting laterally from an arm 92 fixed to the rock shaft 38. When one of the tabulator keys 45 is operated to project the stop 34 into the path of the appropriate stop lug 33 and release the carriage, such operation as has been heretofore described will rock the shaft 38 resulting in an upward swinging movement of the crank arm 92. Consequently the pin 91 will move away from the lever 88 releasing the same and permitting the spring 86 to force the clutch member 83 forward until its clutch teeth engage with the clutch teeth on the pinion 82. Said pinion is thereby connected to turn with the shaft 77 so that as the carriage thereafter moves leftward free of the escapement its motion will be transmitted through the rack 20 and gear 21 to the pinion 82 and shaft 77, thus forcing said shaft to turn. As a result, the eccentric disk 75 will rotate and will coöperate with the strap 73, 74 to oscillate the retarding device or pendulum 61, 63, the motion being transmitted from the eccentric to the arm 63 through the flexible or spring member 71. The speed of oscillation or vibration of the device 61, 63 will increase in proportion to the velocity of the power driven carriage 8. The friction engendered between the eccentric disk and its strap due to overcoming the inertia of the device 61, 63 will be comparatively slight so that the initial movement of the carriage will not be materially retarded. After the device 61, 63 has attained its natural rate of oscillation, which rate will depend on the length of said device, it will offer resistance to any increase in speed which may be transmitted from the carriage. The mutual action and re-action between the eccentric device 74, 75 and the pendulum device 61, 63, generates more or less friction between the eccentric device 75 and the strap 74 which will be effective to retard the carriage and prevent excessive speed thereof. The friction is at a minimum when the pendulum oscillates at its natural rate and will gradually increase as greater motion is transmitted from the eccentric to the pendulum The friction increasing as the speed increases, there will be an increasing retarding effect proportional to the increasing speed. In other words, the action of the retarding mechanism tends to restrict the carriage to a uniform rate of speed and the parts are so proportioned and adjusted that this rate will be such that the tabulating stops will coöperate to end the run of the carriage without excessive shock. On releasing the tabulator key at the end of the carriage run the parts will be restored to normal position and the retarder will be disconnected from the carriage. During "reverse" tabulating operations, the ratchet clutch teeth on the members 82 and 83 slide over each other and the retarder is inoperative.

Referring now to the modification shown in Figs. 5 and 6 these views illustrate parts of a No. 10 Remington typewriting machine and a tabulating mechanism corresponding with that shown in the patent to Yaw No. 984,338, granted February 14, 1911. As appears from Fig. 5 the main frame of the Remington No. 10 machine comprises a base 93, posts 94 and a top plate 95 above which are supported fixed track ways 96 coöperating through anti-friction balls 97 with a carriage truck 98 on which is supported a platen 99. A spring pressed feed rack 100, mounted on the carriage, normally meshes with a feed pinion 101 which is operatively connected with escapement wheels 102 and 103, said wheels coöperating with a dog (not shown). By lifting the rack 100 from the pinion 101 the carriage and platen are disconnected from the escapement and will then move leftward under the pull of the power device or spring drum (not shown). The printing instrumentalities, ribbon mechanism and other parts of the machine, are omitted from the drawings but are or may be of the usual construction. The tabulating mechanism comprises a set of keys of which one is shown and numbered 104. Each tabulating key is carried by a stem 105 which operates on an angular lever 106 having a fixed pivot 107 and connected by a link 108 with a slide bar 109 that coöperates with various devices, shown in the Yaw patent aforesaid but omitted in the present drawing, to control and communicate initial rotary movements to a vertical rock shaft 110 carrying at its upper end a multiple stop 111 provided with a plurality of stop faces which are adapted to coöperate with column stops 112 adjustably mounted on a stop bar 113, said stop bar being supported on arms or brackets 114 secured to the truck 98. As is well understood, the rotary stop member 111, after its initial key actuated movement, is adapted to be turned by successive column stops 112 until finally arrested to determine the end of the tabulating movement of the carriage. The slide bars 109 are also effective to release the carriage, operating on a cross bar 115 supported on angular arms 116 fixed to a rock shaft 117 bearing in the sides of the base. A curved arm 118 fixed to the rock shaft 117, is connected by a link 119 with carriage releasing devices which are novel in construction, being designed for employment in connection with my novel retarding mechanism. As shown in Figs. 5 and 6, the link 119 is pivotally connected at its upper end to an arm 120 integral with a hub 121 pivotally supported at 122 on a U-shaped bracket 123 fixed to the top plate. Projecting from the hub 121 oppositely from

the arm 120, is an arm 124 integral with which is a cylindrical journal or bearing 125 in which is journaled a shaft 126 (Fig. 7). Fixed to the forward end of said shaft is a pinion 127 which underlies the feed rack 100 but is normally out of mesh therewith. Secured by a pin 128 or otherwise to the rear end of the shaft 126 is a disk 129, said disk being eccentric to the axis of the shaft 126. Coöperating with the eccentric disk is a strap 130 which is held from accidental displacement by plates 131 secured at opposite faces of the disk and projecting slightly beyond the periphery thereof. Fixed to and depending from the strap 130 is an arm 132 terminating in a hook 133, said hook engaging in a hole in the upturned end 134 of an angular arm 135 preferably formed of spring metal so as to provide a flexible or yielding connection. The opposite end of the arm 135 is provided with upturned ears 136 which are suitably secured to the end of a shaft 137 projecting outside a bearing 138 which is fixed to the under side of the top plate by screws 139. Secured to the opposite end of the shaft 137 by a screw 140 is an arm 141, said arm depending from the shaft 137 with which it is rigidly connected and carrying at its lower end a weight or bob 142, said weight being formed with a kerf or slot 143 which fits over the arm or bar 141 and being adjustably secured thereto by a screw 144. Pins 145 on the bar 141 limit the extent of the up and down adjustment of the weight 142. The construction is such that when a tabulator key 104 is operated to position and control the multiple stop 111 for coöperation with the column stops 112, the actuated slide bar 109 will operate through the rod 115 to rock the shaft 117 which through the arm 118 will pull down the link 119, thus rocking the member 120, 121, 124, 125 which is essentially a lever of the first order. The rocking of this lever member will raise the pinion 127 into engagement with the feed rack 100, causing said rack to swing upward and disengage from the feed pinion 101 to release the carriage which will then move leftward under the pull of the main spring (not shown). The movement of the carriage will be communicated through the rack 100, pinion 127 and shaft 126 to the eccentric disk 129. Up and down movement will be communicated to the arm 132 from the disk 129 and strap 130, the extent of this up and down movement corresponding with the throw of the eccentric disk. The up and down vibratory movements of the arm 132 will in turn be transmitted through the flexible connection or arm 135 to the shaft 137, giving a rocking movement to said shaft and causing oscillatory movements of the device or pendulum 141, 142. The dotted lines show first the position of the pendulum at the time of connection with the carriage, and second the extent of vibration. As has been heretofore explained in connection with the Figs. 1–4 construction, when the carriage speed becomes excessive, causing the pendulum to exceed its natural rate of vibration, this enforced vibration of the pendulum will re-act on the devices 129, 130 and the friction thus generated will retard the carriage. Thus it will be seen that the retarding mechanism tends to maintain the carriage at a uniform rate of speed and to retard the carriage when such uniform rate is exceeded.

By employing an eccentric and strap the friction is made smoother and more uniform than in other forms of frictional devices and also more effective; also the flexible or yielding connection is of advantage in minimizing the noise and the jarring which would be present if a rigid connection were employed.

Various changes may be made without departing from the spirit and scope of my invention.

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

1. A retarder for the carriage of a typewriting machine comprising a vibratory device and a strap and eccentric, the eccentric and the coöperating strap being arranged between the vibratory device and the carriage.

2. A retarder for the carriage of a typewriting machine comprising a pendulum and a strap and eccentric, the eccentric with its coöperating strap being arranged between the carriage and the pendulum.

3. A retarder for the carriage of a typewriting machine comprising a vibratory device, frictional devices, and connections including a flexible device between said frictional devices and said vibratory device, said frictional devices engaging independently of said flexible device.

4. A retarder for the carriage of a typewriting machine comprising a vibratory device, frictional devices, and means including a spring connecting said frictional devices and said vibratory device, said frictional devices engaging with each other independently of said spring.

5. A retarder for the carriage of a typewriting machine comprising a pendulum, frictional devices, and connections including a flexible arm between said pendulum and said frictional devices, said frictional devices engaging independently of said flexible arm.

6. A retarder for the carriage of a typewriting machine comprising a vibratory device, eccentric devices, and a flexible connection between said eccentric devices and said vibratory device, said eccentric devices engaging with each other independently of said flexible connection.

7. A retarder for the carriage of a typewriting machine comprising a pendulum, a strap and eccentric disk, and a spring arm, the spring arm connecting the strap with the pendulum.

8. A retarder for the carriage of a typewriting machine comprising a vibratory device, eccentric devices, and a flexible connection between said eccentric devices and said vibratory device, said eccentric devices engaging with each other independently of said flexible connection, and means for regulating the flexibility of said connection.

9. A retarder for the carriage of a typewriting machine comprising a pendulum, eccentric devices, a flexible spring arm included in the connections between the pendulum and the eccentric devices, said eccentric devices engaging with each other independently of said spring arm, and adjustable means for varying the flexibility of said arm.

10. In a typewriting machine, the combination of a power driven carriage, a carriage release, a key controlled tabulator operative on said release, and retarding mechanism normally disconnected from the carriage and movable into coöperation therewith by the tabulator, said retarding mechanism comprising a vibratory device, and connections between the same and the carriage, said connections comprising an eccentric disk and a coöperating strap.

11. In a typewriting machine, the combination of a power driven carriage, a carriage release, a key controlled tabulator operative on said release, and retarding mechanism normally disconnected from the carriage and brought into coöperation therewith by the tabulator, said retarding mechanism comprising a vibratory device, and connections between the same and the carriage, said connections comprising a flexible spring arm.

12. In a typewriting machine, the combination of a power driven carriage, a carriage release, a key controlled tabulator operative on said release, and retarding mechanism normally disconnected from the carriage and brought into coöperation therewith by the tabulator, said retarding mechanism comprising a pendulum, and devices for affording connections between said carriage and said pendulum, said devices comprising an eccentric disk with a coöperative strap and also a flexible spring arm.

13. In a typewriting machine, the combination of a power driven carriage, a carriage release, a key controlled tabulator operative on said release, and retarding mechanism normally disconnected from the carriage and brought into coöperation therewith by the tabulator, said retarding mechanism comprising a pendulum, an eccentric disk and coöperating strap, and a spring connection between said strap and said pendulum.

14. In a typewriting machine, the combination of a power driven carriage, a carriage release, a key controlled tabulator operative on said release, and retarding mechanism normally disconnected from the carriage and brought into coöperation therewith by the tabulator, said retarding mechanism comprising a pendulum, an eccentric disk and coöperating strap, and a spring connection between said strap and said pendulum, said spring connection being connected to said pendulum between its pivot and its weight.

15. In a typewriting machine, the combination of a power driven carriage, a carriage release, a key controlled tabulator operative on said release, and retarding mechanism normally disconnected from the carriage and brought into coöperation therewith by the tabulator, said retarding mechanism comprising a pendulum, an eccentric disk and coöperating strap, and a spring connection between said strap and said pendulum, said spring connection being connected to said pendulum between its pivot and its weight, said spring arm being connected to a device secured on the arm of the pendulum and which is adjustable along the pendulum arm to vary the flexibility of the spring arm in operation.

16. In a typewriting machine, the combination of a power driven carriage, tabulating mechanism, an eccentric disk normally disconnected from said carriage but connectible therewith when the tabulating mechanism is operated, a strap coöperating with said disk, a pendulum, and a flexible connection between said pendulum and said strap.

17. In a typewriting machine, the combination of a power driven carriage, tabulating mechanism, a normally operative clutch connecting the escapement devices of the machine with said carriage, an eccentric disk, a normally inoperative clutch operative to connect said disk to said carriage when said tabulating mechanism is operated, a strap coöperative with said disk, a pendulum, and a spring arm connected to said strap and to said pendulum.

Signed at the borough of Manahattan, city of New York, in the county of New York, and State of New York, this 25th day of August, A. D. 1911.

JOHN H. BARR.

Witnesses:
CHARLES E. SMITH,
E. M. WELLS.