H. C. FERGUSON.

TYPE WRITING MACHINE.

APPLICATION FILED SEPT. 23, 1907.

904,859.

Patented Nov. 24, 1908.

2 SHEETS—SHEET 1.

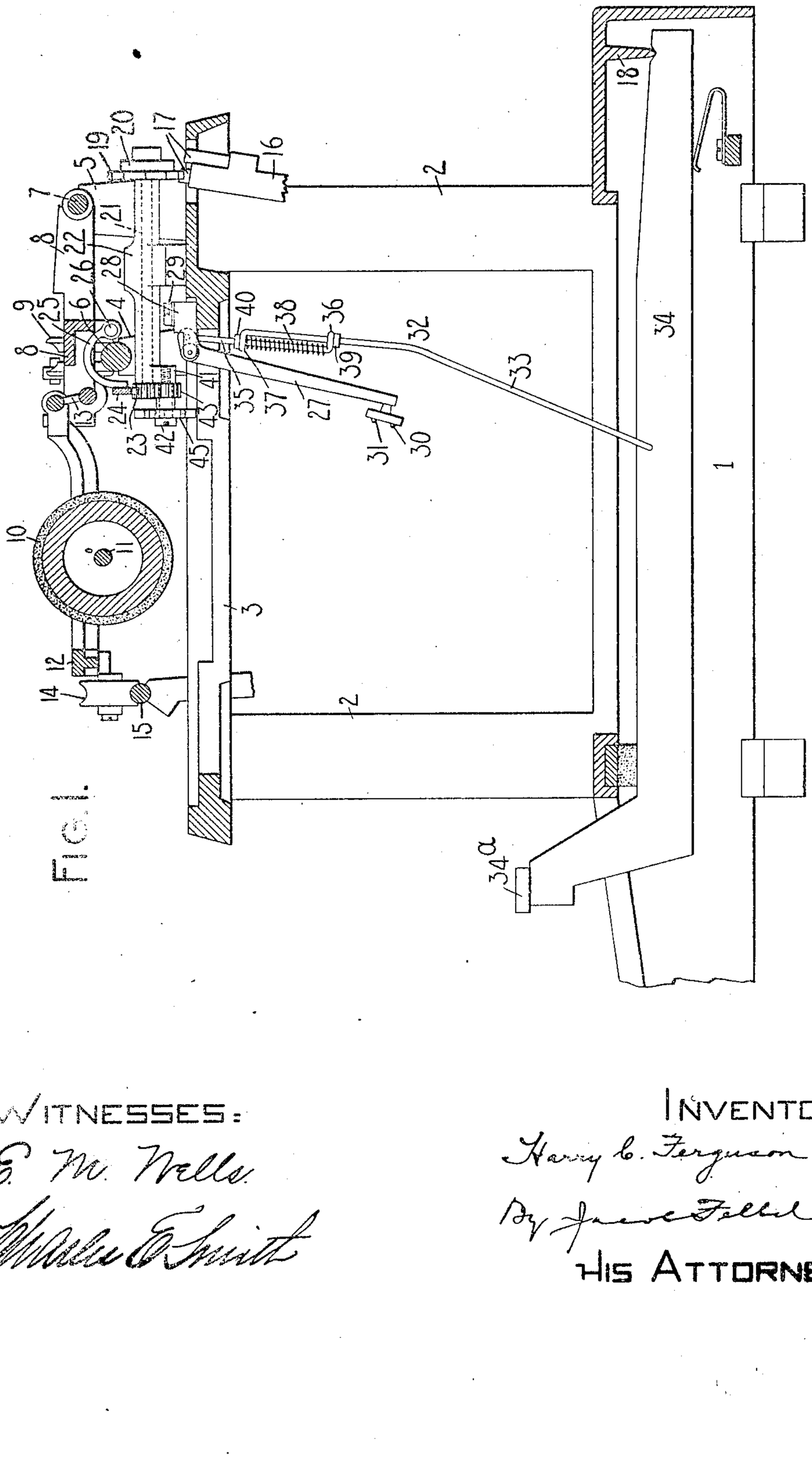

Fig. 1.

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2 SHEETS—SHEET 2.

FIG. 4.

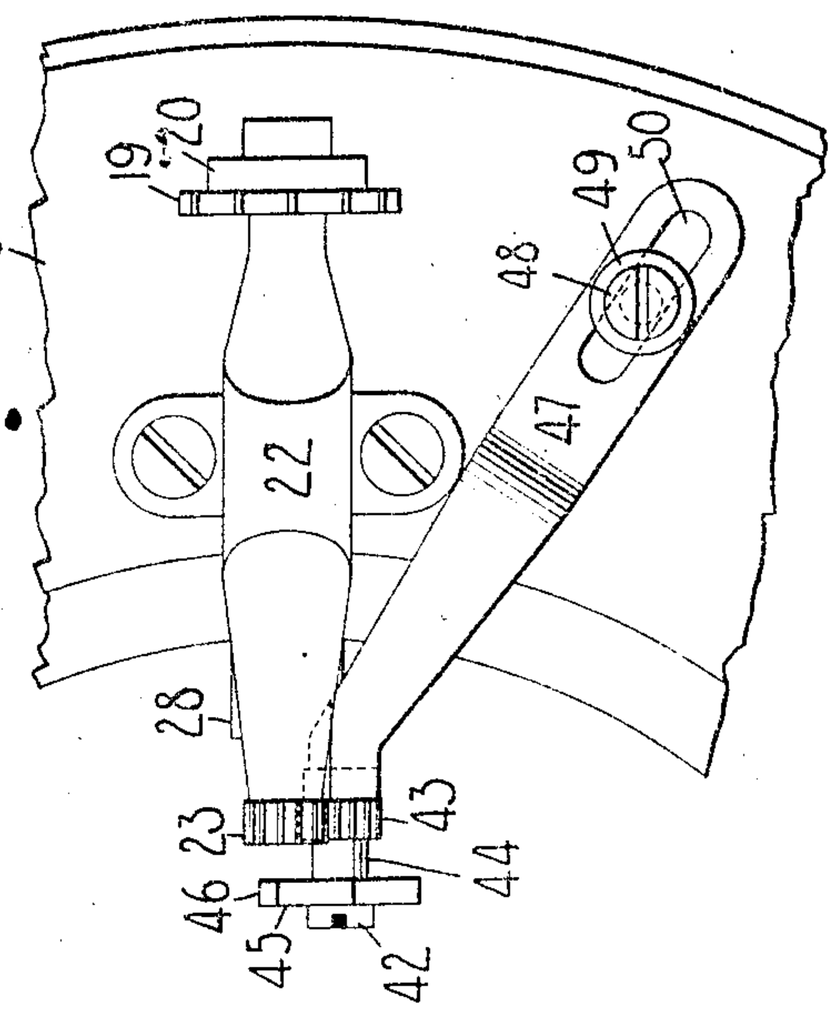
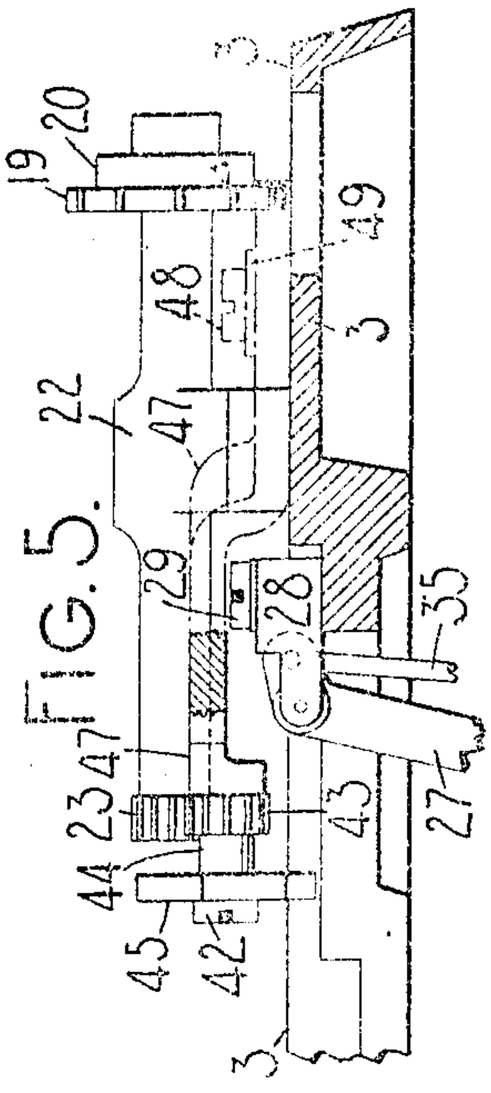


FIG. 5.



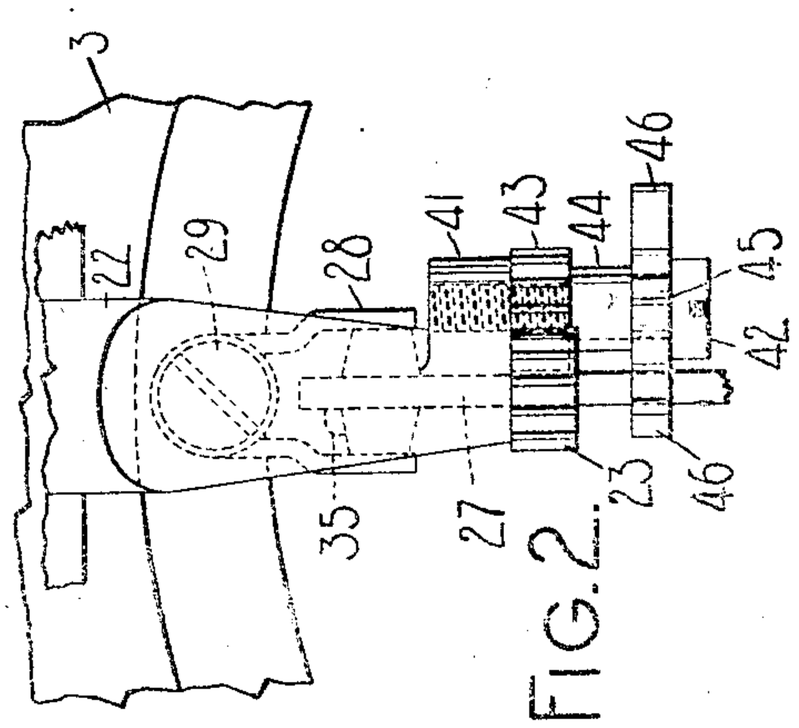


FIG. 2.

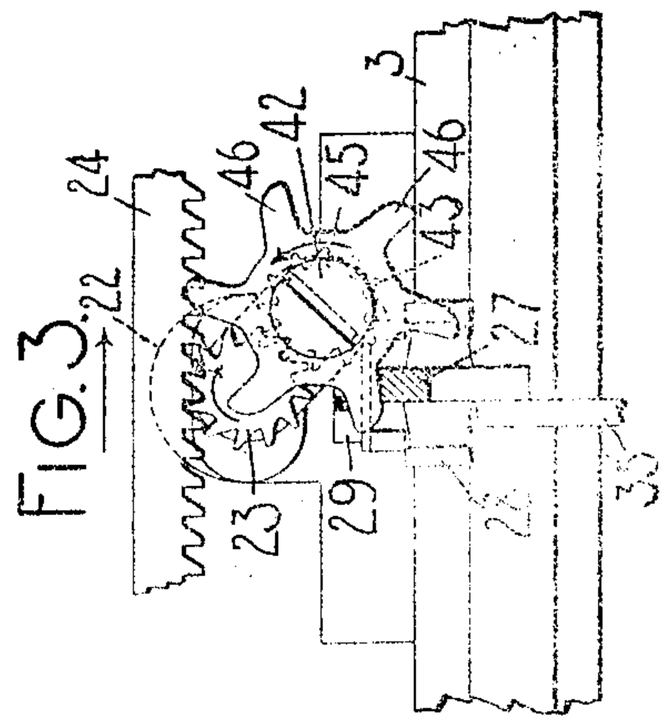


FIG. 3.

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UNITED STATES PATENT OFFICE.

HARRY C. FERGUSON, OF CANTON, OHIO, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 904,859. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed September 23, 1907. Serial No. 394,142.

To all whom it may concern:

Be it known that I, HARRY C. FERGUSON, citizen of the United States, and resident of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to means for actuating printing instrumentalities concurrently with or by the travel of the carriage, the invention being especially adapted for what may be termed "liner" work, such as the production of "following-lines" in bills, statements and indexes; for producing lines of stars or for underscoring and the like, and the object of the invention is to provide simple and efficient means of the character specified.

To the above and other ends which will hereinafter appear my invention consists of the features of construction, arrangements of parts and combinations of devices to be set forth in the following specification and particularly pointed out in the appended claims.

In the accompanying drawings wherein like reference characters indicate corresponding parts in the various views, Figure 1 is a vertical, central, front to rear sectional view of a typewriting machine embodying my invention; parts of the structure being omitted and parts broken away. Fig. 2 is an enlarged detail fragmentary top view showing a portion of the escapement mechanism and the devices of my invention. Fig. 3 is an enlarged detail front elevation of the same. Fig. 4 is an enlarged detail fragmentary plan view similar to Fig. 2 but showing another form of device embodying my invention. Fig. 5 is an enlarged detail fragmentary side elevation of the same with parts in section.

There are various styles or kinds of typewriters. In some machines the paper is applied to a carriage which travels while the printing instrumentalities remain relatively stationary. In other machines the printing instrumentalities are mounted on a traveling carriage while the paper holding devices remain relatively stationary. I have elected to show my invention carried out in the first mentioned kind of writing machines, but I do not wish to be confined or limited to a machine of this description, as my invention may be carried out in any known style or kind of typewriting machines.

Referring more particularly to Fig. 1 it will be seen that the framing of the machine comprises a base 1, corner posts 2 and a top plate 3. The latter carries standards 4 and 5 which support guide rods 6 and 7 respectively for a carriage truck 8. The usual roller 9 is carried by the truck and bears on the rod 6. A platen 10 is mounted on a shaft 11 journaled in a platen frame 12 pivotally connected at the rear side thereof by links 13 to the carriage truck. The platen frame carries at the front side thereof a roller 14 supported on a shift rail 15 to change the "case" position of the platen. A dog rocker 16 carries feed dogs 17 and is connected to a universal bar (not shown) in the usual manner for actuation by the key levers fulcrumed on a web or bar 18 on the base of the machine. The feed dogs coöperate with an escapement wheel 19 operatively connected through the usual pawl and ratchet mechanism (not shown), contained in a drum 20, with a shaft 21 mounted in the bearing 22 secured to the top plate of the machine. The forward end of the shaft 21 carries a feed pinion 23 with which a feed rack 24 meshes. The feed rack is carried by arms 25 pivoted to a carriage at 26 and connected in the usual manner with a rack release key.

The construction thus far described constitutes part of the No. 6 Remington machine and a further description of the construction and operation of this portion of the machine is deemed unnecessary.

In various characters of work it is customary to employ "following-lines", lines of stars to show an omission, and underscoring. The use of stars and underscoring is well understood and examples are given below of the use of "following lines" in statement, invoice and index work:—

8 bales of hay	$40.00
10 bags of corn	10.00

Oliver Twist ..... See. 3 Shelf 6

The devices of my present invention are intended more particularly to accomplish

"liner-work" of the above and like characters rapidly and efficiently and to effect a material saving of time and labor on the part of the operator in preparing such work.

The type carrier, which is shown in the present instance as a type bar 27, is or may be pivoted to a hanger 28 in the usual manner; the hanger being secured by a screw 29 to the top plate beneath the bearing 22. The type bar is of the usual construction except that the type or types 30 and 31 thereon correspond to the character of "liner-work" to be written on the machine. If, for instance, it is of the character given in the above examples, the types will be in the nature of a dash mark. Both types may be the same to afford a writing of the same character whether the platen be in the upper or lower case position or the types may be different to give one character of mark when the platen is in the upper case position and another when the platen is in the lower case position. The type bar 27 is connected to a two-part link 32, one part or member 33 of the link being connected to a key lever 34 which has its finger key 34ª at the keyboard of the machine and which like the other printing key levers is fulcrumed on the web 18. The other part or member 35 of the link is pivoted at its upper end to the type bar and is formed as a loop 36 at its lower end; the loop loosely surrounding the member 33 so as to guide the two members in their relative movements one on the other. The member 33 likewise has a guiding loop 37 which loosely surrounds the member 35. A coiled expansion spring 38 surrounds the member 35 and bears at its ends against the loops 36 and 37 and forces them normally against the stops 39 and 40 respectively which are fixed to the members of the two-part link. This construction provides a spring connection between the finger key 34ª and the type bar, which connection enables the type bar to be moved away from the platen against the tension of the spring when the finger key is maintained depressed as will hereinafter more clearly appear. From an inspection of Figs. 1, 2 and 3 it will be observed that the bearing 22 is provided with a laterally extending lug 41 having a threaded opening for coöperation with a shouldered screw 42. This screw constitutes a bearing or pivot for a pinion 43 connected by a hub 44 with a rotary actuating device 45 which is preferably in the nature of a cam or wiper wheel provided with wiper arms 46. The construction is such that when the feed pinion 23 is rotated, through the movement of the carriage, a corresponding rotation will be transmitted to the geared pinion 43 and to the rotary device or cam 45 connected therewith. A depression of the finger key 34ª moves the type bar 27 to the position shown in Figs. 2 and 3 where the type bar is at or substantially at the printing position. When the type bar 27 has been moved to the operative position, indicated in Figs. 2 and 3, it is also brought into coöperative relation with the rotary device 45 and lies just beneath one of the wiper arms 46 thereon. The relation of the rotary device and its wiper arms 46 with the gearing between said device and the escapement wheel is such that one of the arms 46 will always be brought in a position such as that represented in Fig. 3 when the carriage is arrested at any letter space position in the run of the carriage so that one of the wiper arms 46 is directly above the type bar when the latter is moved to the operative position. Normally the type bar is in the position shown in Fig. 1 where it is out of coöperative relation with the rotary device 45 and the rotation of the device 45 at this time has no effect whatever upon the type bar.

Should the operator desire to use the device for doing "liner" work it is merely necessary to depress the finger key 34ª which is effective to move the type bar to a position where the type thereon is at or near the printing point and, as before stated, this movement is effective to bring the type bar into coöperative relation with the rotary device 45, as shown in Figs. 2 and 3. A movement of the carriage at this time towards the right is effective to rotate the feed pinion 23 and thereby effect a rotation of the rotary device 45 which successively brings the wiper arms 46 thereon into contact with the type bar. This results in intermittently pressing the type bar down against the tension of the spring 38 and releasing it, so that it may spring back under the impulse of the spring to the printing position, thus producing a succession of imprints such, for instance, as those shown in the foregoing examples, the imprints being made at regular intervals in the movement of the carriage. Of course, it should be understood that these imprints are made in rapid succession by a single movement of the carriage from left to right, and that the number of imprints or the length of the line depends upon the extent of movement of the carriage while pressure is maintained on the finger key 34ª. After a line of the desired extent has been produced, pressure on the finger key 34ª is released and the type bar swings back to the normal position shown in Fig. 1.

It will be understood that an actuation of the usual carriage release key hereinbefore referred to will effect an elevation of the feed rack, rendering the intermediate actuating connections between the feed rack and type carrier inoperative to actuate the type carrier.

In another form of construction shown in Figs. 4 and 5 the parts which correspond to

those hereinbefore described bear the same reference numerals and the construction and operation of the device is the same as that previously described except that a bracket 47 is detachably and adjustably secured to the top plate by a screw 48 which is received in a threaded opening in the top plate and bears against a washer 49 to clamp the bracket in place. The screw passes through an enlarged opening 50 in the bracket so that an adjustment of the bracket may be readily effected in order to bring the pinion 43 properly into mesh with the escapement pinion 23. In this construction the screw 42 instead of taking into a threaded opening in an integral projection on the bearing 22 is received in a threaded opening in the forward end of the bracket 47.

In the construction shown in Figs. 4 and 5 the devices of my invention are in the nature of attachments which can be readily applied to existing forms of typewriting machines without changing the structural features of said machines.

From the foregoing description it will be seen that I have provided simple and efficient means operable independently of successive key operations and controlled by the movement of the carriage for effecting an operation of a printing instrumentality to produce a line of imprints, and that by this construction much time and labor is saved over the method hereinbefore employed of effecting a separate actuation of the finger key for each imprint.

It will also be understood that the carriage receives a continuous movement in its return to the right; that it is this continuous movement which actuates the type carrier 20 to effect a succession of imprints; and that at this time the carriage is moved by hand and therefore constitutes a device movable by hand to effect a movement of a toothed device 45, or one having cam teeth, and thereby effect a succession of printing movements of the type carrier.

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. In a typewriting machine, the combination of a carriage, an actuating device controlled by the movement of the carriage, a vibratory type-carrier, and key controlled means for bringing said type-carrier into cooperative relation with said actuating device to be vibrated thereby.

2. In a typewriting machine, the combination of a carriage, a rotary actuating device controlled by the movement of the carriage, a type-carrier, and key controlled means for bringing said type-carrier into cooperative relation with said rotary actuating device, whereby an actuation of the type-carrier may be effected through said rotary actuating device by a movement of the carriage.

3. In a typewriting machine, the combination of a carriage, a rotary cam controlled by the movement of the carriage, a type bar and key controlled means for bringing said type bar into coöperative relation with said rotary cam, whereby a vibratory printing movement of the type bar may be effected through said rotary cam by a movement of the carriage.

4. In a typewriting machine, the combination of a carriage, escapement mechanism therefor including an escapement wheel, a rotary actuating device operated by a part of said escapement mechanism, a type-carrier and key actuated means for rendering said type-carrier operative by said rotary actuating device.

5. In a typewriting machine, the combination of a carriage, escapement mechanism therefor including a feed pinion, an actuating device controlled by said feed pinion, and a printing instrumentality actuated by said actuating device.

6. In a typewriting machine, the combination of a carriage, escapement mechanism therefor including a feed pinion, an actuating device controlled by said feed pinion, a printing instrumentality actuated by said actuating device, and a key for bringing said printing instrumentality into coöperation with said actuating device.

7. In a typewriting machine, the combination of a carriage, escapement mechanism therefor including a feed pinion, a rotary actuating device which is turned by said feed pinion, and a type carrier intermittently actuated by said rotary actuating device.

8. In a typewriting machine, the combination of a carriage, escapement mechanism therefor including a feed pinion, a rotary actuating device which is turned by said feed pinion, a type-carrier intermittently actuated by said rotary actuating device, and a key for bringing said type-carrier approximately to the printing position and into the control of said rotary actuating device.

9. In a typewriting machine, the combination of a carriage, a type-carrier, actuating means controlled by the movement of the carriage for oscillating said type-carrier, a key at the keyboard of the machine, and means controlled by said key for bringing said type-carrier approximately to the printing position and into coöperative relation with said actuating means.

10. In a typewriting machine, the combination of a type-carrier, a key therefor, an intermediate spring connection between said finger key and type-carrier, and means independent of said finger key for actuating said type-carrier.

11. In a typewriting machine, the combination of a type-carrier, a key therefor, an intermediate spring connection between said finger key and type-carrier, and means controlled by the travel of the carriage for actuating said type-carrier.

12. In a typewriting machine, the combination of a type-carrier, a key therefor, an intermediate spring connection between said finger key and type-carrier, and an actuating device independent of said finger key for automatically operating said type-carrier concurrently with the travel of the carriage, the finger key moving said type-carrier to or approximately to the printing position and into coöperative relation with said actuating device.

13. In a typewriting machine, the combination of a type-carrier, a key therefor, an intermediate spring connection between said finger key and type-carrier, and automatically actuated means independent of the finger key for intermittently moving said type carrier against the pressure of said spring connection.

14. In a typewriting machine, the combination of a carriage, a platen, a vibratory type, a finger key for said type, and means for automatically vibrating the type against the platen when pressure is maintained on said finger key and the carriage receives a traveling movement.

15. In a typewriting machine, the combination of a carriage, a feed pinion therefor, a type-carrier, an actuating device operated by said feed pinion and coöperative with said type-carrier, a finger key and a spring between said type-carrier and finger key.

16. In a typewriting machine, the combination of a carriage, a wheel having a plurality of wiper arms, said wheel being turned during the travel of the carriage, a type-carrier, and means for bringing said type-carrier into coöperative relation with said wiper arms.

17. In a typewriting machine, the combination of a carriage, a wheel having a plurality of wiper arms, said wheel being turned during the travel of the carriage, a type-carrier, and a finger key for bringing said type-carrier to or approximately to the printing position and into coöperative relation with said wiper arms.

18. In a typewriting machine, the combination of a carriage, a wheel having a plurality of wiper arms, said wheel being turned during the travel of the carriage, a type-carrier, a finger key for bringing said type-carrier to or approximately to the printing position and into coöperative relation with said wiper arms, and a spring between said type-carrier and finger key.

19. In a typewriting machine, the combination of a carriage, a feed pinion for the carriage, a wheel which is rotated by said feed pinion, wiper arms on said wheel, a type-carrier, a finger key, and a spring between said finger key and type-carrier.

20. In a typewriting machine, the combination of a carriage, a platen, a feed pinion for the carriage, a wheel which is rotated by said feed pinion, wiper arms on said wheel, a type-carrier, a finger key operative to move the type carrier to or approximately to the printing position and into coöperation with said wiper arms, and a spring between said finger key and type-carrier, said wiper arms being operative during the travel of the carriage to intermittently move the type carrier against the tension of said spring and to vibrate the type-carrier so as to move the type on the carrier against the face of the platen or the paper thereon.

21. In a typewriting machine, the combination of a carriage, a vibratory type carrier, and means controlled by the movement of the carriage for vibrating said type carrier.

22. In a typewriting machine, the combination of a carriage, a vibratory type carrier, and means controlled by the movement of the carriage for vibrating said type carrier, said means being operable to actuate the type carrier only during the travel of the carriage in one direction.

23. In a typewriting machine, the combination of a carriage, a vibratory type carrier, actuating means controlled by the movement of the carriage for actuating said type carrier, and means for rendering said actuating means operative or inoperative to effect vibratory printing operations of the type carrier.

24. In a typewriting machine, the combination of a carriage, a rack which moves concurrently with the carriage, and a type carrier actuated by said rack.

25. In a typewriting machine, the combination of a carriage, a rack carried by and movable with the carriage, and a type carrier intermittently actuated by said rack.

26. In a typewriting machine, the combination of a carriage, a rack the movement of which is controlled by the movement of the carriage, a type carrier, intermediate actuating means between said rack and type carrier, and means for rendering said intermediate connections inoperative to actuate the type carrier.

27. In a typewriting machine, the combination of a carriage, a device the movement of which is controlled by the carriage, a type carrier actuated by said device, and means for rendering said device operative or inoperative on the type carrier.

28. In a typewriting machine, the combination of a carriage, a rack which moves concurrently with the carriage, a type car-

rier actuated by said rack to print, and means for rendering the rack inoperative to actuate the type carrier.

29. In a typewriting machine, the combination of a carriage, a type carrier, means for moving the type carrier partly to the printing position, and means operable concurrently with the carriage for moving the type carrier from said last named position to effect a vibratory printing movement of the carrier.

30. In a typewriting machine, the combination of a carriage, a type carrier, means for moving the type carrier partly to the printing position, and means controlled by the movement of the carriage for moving said type carrier from said last mentioned position to effect a vibratory printing movement of the carrier.

31. In a typewriting machine, the combination of a typewriter frame, a lever and cooperating means operative to elevate one of the type-bars when said lever is moved, and mechanism adapted to vibrate the type-bar by the movement of the carriage, substantially as and for the purpose specified.

32. In a typewriter attachment of the class described, and for the purpose set forth, a type bar; a lever adapted to elevate the type bar; a carriage, and means for actuating the type bar, when elevated, by the return movement of the carriage, substantially as and for the purpose specified.

33. In a typewriting machine, the combination of a carriage, a type carrier, and means for actuating said type carrier, said means comprising a device having cam teeth, said device being actuated concurrently with the carriage.

34. In a typewriting machine, the combination with printing keys, a carriage, and key-actuated printing instrumentalities, of a type, and means controlled by the movement of the carriage for causing said type to make a succession of imprints in a line on the paper.

35. In a typewriting machine, the combination with a carriage, keys and key-actuated type bars, of a pivoted type bar, and means controlled by the movement of the carriage for imparting a succession of strokes to said type bar to cause the type thereon to print a number of times in succession in a line.

36. In a typewriting machine, the combination with a carriage, keys and printing instrumentalities controlled by said keys, of a type bar; means for moving said type bar from its normal position to a position closer to the printing point; and means controlled by the movement of said carriage for imparting a succession of short printing strokes to said type bar to make a succession of imprints in a line.

37. In a typewriting machine, the combination with a carriage, keys and key-actuated printing instrumentalities, of a vibratory type; a toothed device; and means operated by a continuous movement of said toothed device for producing a succession of vibratory printing movements of the type to effect a succession of imprints from said type.

38. In a typewriting machine, the combination with a carriage, keys and key-actuated printing instrumentalities, of a type bar, means for moving said type bar from its normal position to a position closer to the printing point; and means for imparting to said type bar from its last named position a rapid succession of printing strokes.

39. In a typewriting machine, the combination of a vibratory type, and means controlled by a continuous movement of the carriage for causing a vibratory movement of said type to make a succession of imprints on the paper.

40. In a typewriting machine, the combination of a vibratory type, a device movable by hand, and means operated by a continuous movement of said device for imparting a succession of vibratory printing strokes to said type.

41. In a typewriting machine, the combination of a carriage, a vibratory type, means controlled by a continuous movement of the carriage for causing said type to make a succession of vibratory movements to produce a succession of imprints in a line, and means for rendering the last mentioned means operative or inoperative to effect printing operations.

42. In a typewriting machine, the combination of a carriage, a rotary device which moves concurrently with said carriage, and a type carrier actuated by said rotary device.

43. In a typewriting machine, the combination of a carriage, a rotary device which moves concurrently with said carriage, and a vibratory type carrier intermittently actuated by said rotary device.

44. In a typewriting machine, the combination of a carriage, a rotary device automatically actuated by the travel of the carriage, and a type carrier actuated by said rotary device.

45. In a typewriting machine, the combination of a carriage, a rotary device automatically actuated by the travel of the carriage in one direction only, and a type carrier actuated by said rotary device.

46. In a typewriting machine, the combination of a carriage, a rotary device automatically actuated by the travel of the carriage, and a pivoted type bar vibrated by the rotation of said rotary device.

47. In a typewriting machine, the combination of a carriage, a rotary device which moves concurrently with said carriage, a type

carrier actuated by said rotary device, and means for rendering the rotary device inoperative to effect a printing operation of the type carrier.

48. In a typewriting machine, the combination of a carriage, a rotary device automatically actuated by the travel of the carriage, a type carrier actuated by said rotary device, and means for rendering the rotary device inoperative to effect a printing operation of the type carrier.

49. In a typewriting machine, the combination of a carriage, a rotary device automatically actuated by the travel of the carriage in one direction only, a type carrier actuated by said rotary device, and means for rendering the rotary device inoperative to effect a printing operation of the type carrier.

50. In a typewriting machine, the combination of a carriage, a cam rotated by the travel of the carriage, and a type carrier actuated by the rotary cam.

51. In a typewriting machine, the combination of a carriage, a rotary device actuated by the travel of the carriage, and a vibratory pivoted type carrier which is given printing movements by said rotary device at regular intervals in the movement of the carriage.

52. In a typewriting machine, the combination of a carriage, a cam rotated by the travel of the carriage, a type carrier actuated by the rotary cams, and means whereby the rotary cam is rendered operative or inoperative to effect a printing operation of the type carrier.

53. In a typewriting machine, the combination of a carriage, a rotary device actuated by the travel of the carriage, a vibratory pivoted type carrier which is given printing movements by said rotary device at regular intervals in the movement of the carriage, and means whereby the rotary device is rendered operative or inoperative to effect a printing operation of the type carrier.

54. In a typewriting machine, the combination of a carriage, a rack, a rotary device actuated by said rack and controlled by the movement of the carriage, and a type carrier actuated by said rotary device.

55. In a typewriting machine, the combination of a carriage, a rack, a rotary device actuated by said rack and controlled by the movement of the carriage, a type carrier actuated by said rotary device, and means whereby the type carrier is rendered inoperative to print by said rotary device.

56. In a typewriting machine, the combination of a carriage, a rack carried by and traveling with the carriage, a rotary device actuated by said rack, and a vibratory type bar actuated by said rotary device.

57. In a typewriting machine, the combination of a carriage, a type carrier, preliminary moving means for moving said type carrier adjacent to the printing position, a rotary device controlled by the movement of the carriage, and means coöperating with said rotary device for causing the type to print.

58. In a typewriting machine, the combination of a carriage, a vibratory type carrier, means for moving the type carrier preliminarily adjacent to the printing point, an automatically actuated rotary device controlled by the travel of the carriage, and means coöperating with the said rotary device for causing the type to print.

59. In a typewriting machine, the combination of a carriage, a vibratory type carrier, means for moving said type carrier preliminarily adjacent to the printing point, an automatically rotary device controlled by the travel of the carriage, means coöperating with said rotary device for causing the type to print, and means for rendering the carriage inoperative on said rotary device.

60. In a typewriting machine, the combination of a carriage, a type, and means producing a succession of imprints from said type by a single movement of the carriage, said means including a rotary actuating device the movement of which is controlled by the movement of the carriage.

61. In a typewriting machine, the combination of a carriage, a vibratory type carrier, and means for producing a succession of imprints from the type on said carrier by a single movement of the carriage, said means including a rotary actuating device controlled by the movement of the carriage.

62. In a typewriting machine, the combination of a carriage, a vibratory type carrier, and means for producing a succession of imprints from the type on said carrier by a single movement of the carriage, said means including a rotary cam controlled by the movement of the carriage.

Signed at Canton, in the county of Stark and State of Ohio, this 13th day of September A. D. 1907.

HARRY C. FERGUSON.

Witnesses:
S. P. FERGUSON,
C. H. BEEMAN.