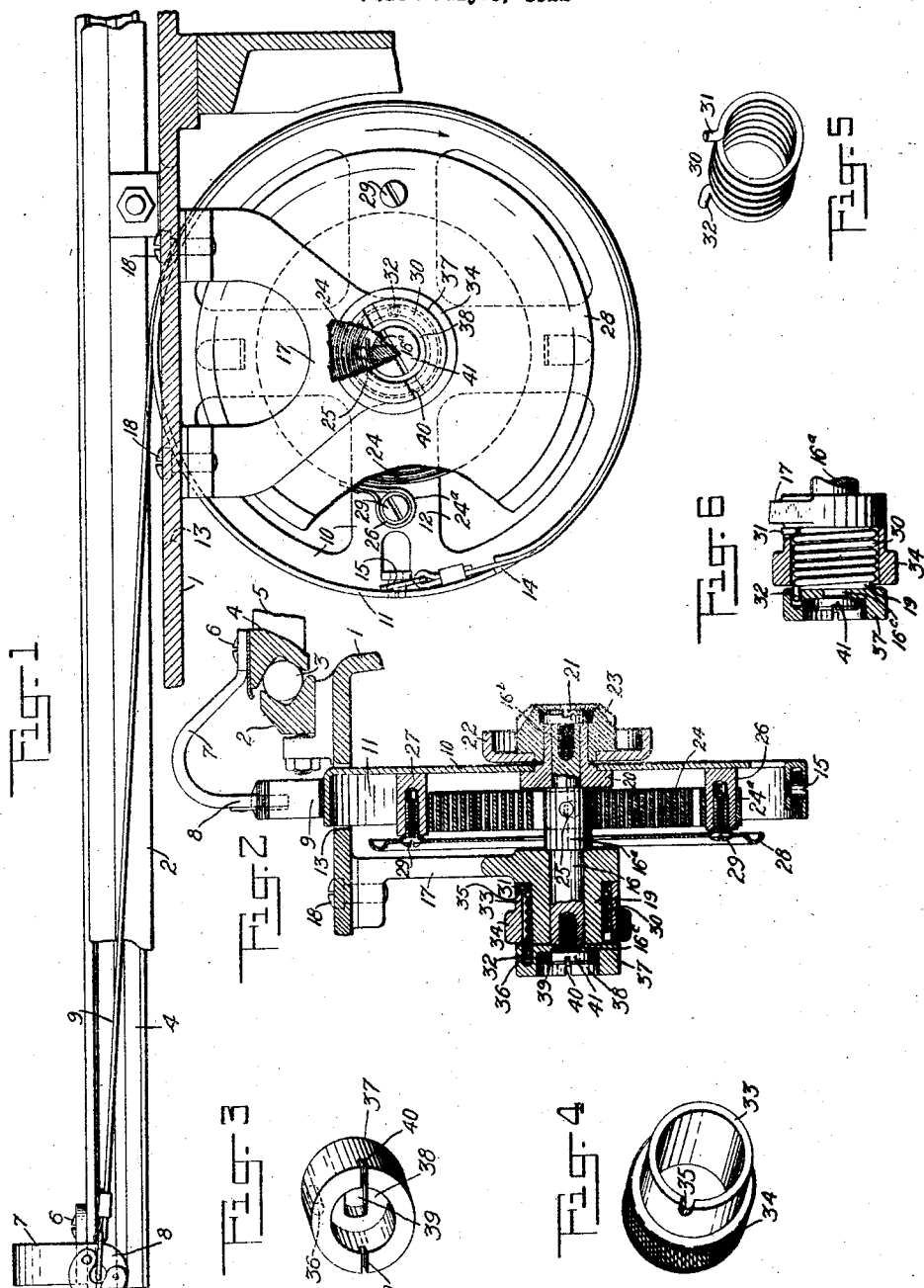


Aug. 25, 1925.

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J. PHELPS
TYPEWRITING MACHINE

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UNITED STATES PATENT OFFICE.

JOSEPH PHELPS, OF NORTH CALDWELL, NEW JERSEY, ASSIGNOR TO REMINGTON
TYPEWRITER COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPEWRITING MACHINE.

Application filed July 8, 1922. Serial No. 573,527.

To all whom it may concern:

Be it known that I, JOSEPH PHELPS, a citizen of the United States, and resident of North Caldwell, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a specification.

My invention relates to the carriage motor or main spring mechanism of writing machines, and its principal object is to provide new and improved means for regulating and controlling the tension of the carriage main spring, eliminating the usual pawl and ratchet device and the noise attendant upon its use, and affording adjustment of the spring to obtain any desired tension or pull thereof.

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

The preferred form of my invention is illustrated in the accompanying drawings, wherein

Figure 1 is a fragmentary rear elevation partly in section of the carriage main spring mechanism of the No. 10 Remington typewriting machine showing my invention applied thereto.

Figure 2 is a fragmentary sectional view taken on a transverse plane passing diametrically through the spring drum, which in Fig. 2 has been assumed for purposes of clearness to have been turned a quarter turn from the Fig. 1 position.

Figures 3, 4 and 5 are perspective views of detached parts.

Figure 6 is a fragmentary side elevation partly in section.

The main frame of the machine comprises a top plate 1 on top of which are fixed grooved guide rails at the front and rear, the rear rail 2 being shown herein. Said rail cooperates through roller bearings 3 to support and guide the platen carriage of the machine as it travels back and forth across the top plate. The platen carriage comprises a rectangular truck and a platen frame

shiftably supported thereon, the grooved rear bar 4 and one of the end bars 5 of the truck being shown in the drawing. Fixed to the right-hand rear corner of the truck by a screw 6 is a curved arm 7 terminating at its free end in a hook 8 to which hook is detachably connected one end of a band or strap 9 which connects the carriage main spring devices. Said main spring devices comprise a spring drum 10 having a circular flange 11, and lightened by cutouts indicated at 12 with which its face is provided. The drum or housing 10, 11 is vertically arranged and projects upward through a slot indicated at 13 in the top plate 1. The band or strap 9 passes through a slot or opening 14 in the flange 11, the end of said band being connected to a screw pin or stud 15 which is attached to the inside of the flange 11. During traveling movements of the carriage and turning movements of the drum the band or tape 9 winds on and off the flange 11. The drum is rotatably supported on a stub-shaft or stud 16 which in turn bears rotatably in a U-shaped bracket 17 secured by screws 18 to the under side of the top plate and projecting downward therefrom, the bracket being provided with a circular boss or thickened portion 19 which is bored out to provide a bearing opening for the shaft 16. Said shaft extends horizontally forward from its bearing being provided with an enlarged middle portion 16^a and a reduced forward portion 16^b. The portion 16^b receives and provides a bearing for a flanged member 20 which is fixed to the drum 10, 11 and provides a hub therefor, enabling the drum to turn or rotate on the portion 16^b of the shaft. A headed screw 21 confines a ratchet wheel 22 and a beveled pinion 23 to the forwardly projecting portion of the hub and also prevents displacement of the hub and its drum from their bearing. The ratchet wheel 22 and pinion 23 are parts of the ribbon feeding mechanism of the No. 10 Remington machine as is well understood. The drum 10, 11 houses a main spring 24 which is coiled around the portion 16^a of the shaft 16, the inner end of said spring being hooked over a notched pin or hook 25 projecting radially

from the part 16^a of the shaft. The outer end of the main spring is provided with a loop 24^a which fits over a stud 26 secured to the inner face of the drum. A corresponding stud 27 is arranged diametrically opposite the stud 26, the two studs providing a support for a circular cover plate 28 which is secured in place by screws 29 threaded into the studs, and has a large circular hole at its center which enables the plate to be fitted readily over the shaft portion 16^a so as to cover the coils of the main spring from the rear. The main or motor spring 24, as will be plain from Fig. 1, tends constantly to turn the spring drum in the direction of the arrow, the force being transmitted from the drum to the platen carriage through the band or connecting device 9 so that the main spring constantly urges the carriage leftward across the top plate or towards the right as viewed from Fig. 1, such movement of the carriage being normally prevented by the escapement devices (not shown). It will be understood that the impulse of the main spring transmitted to the shaft 16 through the hook 25 tends constantly to turn said shaft in a counter-clockwise direction when viewed as in Fig. 1. The shaft provides an anchorage for the main spring, and as is well understood, when turned or permitted to turn counter-clockwise will afford an unwinding of the main spring and reduce the tension thereof, while when said shaft is turned oppositely or clockwise it will wind up the spring and increase its tension.

It has been usual heretofore to control the adjustments of the spring drum shaft and the variations of the main spring tension by devices including a pawl and a ratchet, the manipulation of which unavoidably creates considerable noise as the teeth of the pawl and ratchet devices strike on or click over one another. In order to avoid this objection I have provided a spring clutch or locking spring for controlling the shaft, which clutch may be readily controlled to afford rotary movements of the shaft so as to alter the anchorage of the main spring and wind it or unwind it. My novel tension controlling devices are practically noiseless in operation and have the further advantage of permitting finer adjustments than are possible with a pawl and ratchet which restricts the adjustment necessarily to a distance corresponding to one tooth of the ratchet wheel or to some definite multiple of this distance, and cannot take care of finer adjustments. As contrasted with this, my invention affords adjustment to any desired extent. The spring clutch in the present instance is in the form of a coiled or spiral spring 30 of wire which fits comparatively snugly over the boss or thickened

portion 19 of the bracket 17 and operates when in normal condition to frictionally grip or engage with said boss, the two parts acting as a friction clutch. The inner or forward end 31 of the spring 30 is turned radially outward, while the opposite or rear end 32 of said spring is turned backward away from the body of the spring. The locking or clutch spring 30 is housed or covered by a hollow finger piece or rotary shell 33 having a knurled rib or enlarged circular finger portion 34. The shell 33 loosely surrounds the spring 30, being arranged concentrically with said spring and also with the shaft 16. The inner or forward face of the shell 33 is provided with a cutout or open-mouthed slot indicated at 35, which receives the end portion 31 of the clutch spring. The projecting rear end 32 of said clutch spring is received in a hole indicated at 36 formed in the front face of a circular head or stop washer 37 whose construction is best illustrated in Fig. 3. The washer 37 is formed with a circular depression 38 in its rear face and the bottom of this depression is provided with a hole 39 having two parallel flat sides. Also, the rear face of the washer is provided with a cross kerf or neck as indicated at 40, the kerf 40 being divided into two parts by the depression or countersink 38. The washer 37 fits over the reduced end portion 16^c of the shaft 16, said reduced portion having parallel flat sides corresponding to those of the hole 39 in the washer, the construction being such that when the washer is fitted on the shaft and secured in place it is rigid with the shaft. A headed screw 41 threaded into the rear end of the shaft 16 retains the washer in place thereon and close to the rear face of the shell 33, 34. The construction is such that the clutch spring 30 is covered or housed throughout its length by the shell, while the washer 37 covers and protects the spring from the rear. It will be understood that the shaft 16 may be turned by turning the washer 37 and that this may be effected by a tool or coin inserted in the nick 40. It will further be understood that the inner end of the main spring 24 is connected to and controlled normally by the clutch spring, this connection being effective through the hook 25, the shaft 16 and the washer 37, with which last named element the clutch spring is connected at its end 32 through the hole 36. The friction clutch or locking spring 30 normally holds the shaft or anchorage 16 in stationary condition, but it will be further apparent, especially from a consideration of Figs. 2 and 6, that the frictional grip or clutch of the locking spring 30 on the boss or stationary part 19 may be relieved, so as to release or free the shaft 16, by unwinding the clutch

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spring from either one of its opposite ends 31 and 32, thus sufficiently lessening the frictional grip of the spring to permit it to turn on the boss 19. When the washer 37 is rotated in clockwise direction the spring clutch is released from its rear end, thus freeing the shaft 16 which under the turning impulse received from the washer will be turned to tighten or wind up the main spring from its inner end, and thus to increase the main spring tension to any desired extent, the spring clutch 30, when once loosened from the boss 19, itself turning as a whole with the shaft 16. As soon as the desired spring tension is attained the turning force applied to the washer through the kerf 40 is removed and the inherent tension of the clutch spring will become effective to cause it to tighten its coils and regrip or frictionally reengage with the outer face of the boss 19 and thus again to lock the shaft 16 against turning movements and to hold said shaft in its readjusted position. On the other hand should it be desired to reduce the tension of the main spring this can be effected by turning the shell 33, 34 counter-clockwise. This movement of the shell will be transmitted through the upturned end 31 of the spring 30 to the spring itself and will tend to unwind the spring, loosening it sufficiently to release it from its frictional or locking engagement with the boss 19 and thus freeing the shaft 16 which will then turn under the impulse of the main spring in clockwise direction so as to unwind the spring at its inner end and reduce its tension to a corresponding extent. It will be understood that this turning movement is communicated by the hand of the operator through power applied to the finger piece 34. As soon as the tension has been altered to whatever extent may be desired, this power is removed and thereupon the spring 30 will tighten of itself and become effective on the boss 19, re-clutching the latter and thus locking or clutching the shaft or anchorage 16 in its readjusted position.

Various changes may be made without departing from my invention.

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

1. In a typewriting machine, the combination of a traveling paper carriage, a spring drum, a rotary member, and a coiled spring clutch connecting said member with said spring drum.

2. In a typewriting machine, the combination of a carriage main spring, means normally holding said main spring at one end, and means for releasing said holding means to permit said spring to be wound and unwound to any desired extent.

3. In a typewriting machine, the combina-

tion of a carriage, a coiled main spring connected thereto, a shaft to which the inner end of said coiled spring is anchored, means normally holding said shaft against rotation, and means for rendering said holding means inoperative and permitting rotation of said shaft to any desired extent under the impulse of said spring.

4. In a typewriting machine, the combination of a carriage, a coiled main spring connected thereto, a shaft to which the inner end of said coiled spring is anchored, means normally holding said shaft against rotation, and means for rendering said holding means inoperative and permitting rotation of said shaft to any desired extent under the action of said spring, said last recited means including a device for turning said shaft to any desired extent against the tension of said spring.

5. In a typewriting machine, the combination of a carriage main spring, and a spiral spring clutch connected to said main spring and effective through its own gripping action to maintain the tension of said main spring.

6. In a typewriting machine, the combination of a carriage main spring, a spring clutch connected to said main spring, and means for controlling the opposite ends of said clutch so as to loosen said clutch from either of its ends at will.

7. In a typewriting machine, the combination of a carriage main spring, a spring clutch connected to said main spring, means for controlling one end of said spring clutch, and separate means for controlling the opposite end of said spring clutch.

8. In a typewriting machine, the combination of a carriage main spring, a coiled spring connected to said main spring, a stationary part to which said coiled spring clutches said main spring, and hand operated means for loosening the coils of the clutching spring from the opposite ends of its coil to release its clutch on said stationary part.

9. In a typewriting machine, the combination of a carriage main spring, a locking spring connected to and controlling one end of said main spring, and a plurality of means for releasing said locking spring.

10. In a typewriting machine, the combination of a shaft, a main spring constantly tending to turn said shaft in one direction, a spiral clutch spring normally holding said shaft from so turning through the gripping action of the spiral spring itself, and means for releasing said clutch spring so as to permit the shaft to turn under the impulse of the main spring or to be turned in opposition to said main spring.

11. In a typewriting machine, the combination of a shaft, a main spring constantly

tending to turn said shaft in one direction, a clutch spring normally holding said shaft from so turning, and means for releasing said clutch spring so as to permit the shaft to turn under the impulse of the main spring or to be turned in opposition to said main spring, said means comprising two separate devices, one connected to one end of the clutch spring and the other connected to the opposite end thereof.

12. In a typewriting machine, the combination of a carriage main spring, a friction spring connected to said main spring and to a stationary part, and duplex means for releasing said friction spring from said part, one of said means being operative to increase the tension of said main spring and the other affording reduction of the tension thereof.

13. In a typewriting machine, the combination of a carriage, a main spring connected to said carriage, an adjustable stationary anchorage for the inner end of said main spring, and means including a coiled friction spring and a co-operating element whose surface is frictionally engaged thereby for holding said anchorage in adjusted positions.

14. In a typewriting machine, the combination of a traveling carriage, a main spring connected to said carriage, a shaft to which the inner end of said spring is anchored, a coiled friction spring having one end connected to said shaft, and a rotary hand controlled device to which the other end of said friction spring is connected, the construction enabling the friction spring to be released from either of its ends at will.

15. In a typewriting machine, the combination of a traveling carriage, a main spring connected to said carriage, an anchor member to which the inner end of said spring is anchored, a coiled friction spring having one end connected to said member, a part having a curved surface concentric with said member and which is engaged by the coils of said friction spring, and a movable device to which said friction spring is connected at its opposite end.

16. In a typewriting machine, the combination of a traveling carriage, a main spring connected to said carriage, a shaft to which the inner end of said main spring is anchored, a coiled friction spring having one end connected to said shaft, and a device surrounding the coils of said friction spring and connected to the other end thereof, said device being concentric with said shaft and rotatable at will to release said friction spring.

17. In a typewriting machine, the combination of a traveling carriage, a main spring connected to said carriage, a shaft to which the inner end of said main spring is anchored, a coiled friction spring having one end connected to said shaft, and a ro-

tary housing surrounding said friction spring and connected thereto, said housing being rotatable by hand to release said friction spring.

18. In a typewriting machine, the combination of a traveling carriage, a main spring connected to said carriage, a shaft to which the inner end of said spring is anchored, a circular hand controlled device fixed to the outer end of said shaft, a coiled friction spring having one end connected to said device, and a shell surrounding said shaft and provided with a knurled finger portion, the inner end of said friction spring being connected to said shell.

19. In a typewriting machine, the combination of a traveling carriage, a main spring connected to said carriage, a shaft to which the inner end of said spring is anchored, a circular hand controlled device fixed to the upper end of said shaft, a coiled friction spring having one end connected to said device, and a shell surrounding said shaft and provided with a knurled finger portion, the inner end of said friction spring being connected to said shell, said circular device being provided with a nick to receive a tool whereby said circular device may be turned to release said friction spring and rotate said shaft to wind up said main spring, said shell being rotatable by hand to release said friction spring and permit said shaft to turn to diminish the tension of said main spring.

20. In a typewriting machine, the combination of a traveling carriage, a drum or housing connected to said carriage, a main spring coiled within said drum and connected thereto at its outer end, a shaft for said drum to which the inner end of said main spring is connected, a bearing for said shaft having a cylindrical portion, a spiral locking spring surrounding said cylindrical portion and frictionally engaging therewith, and separate devices connected to the opposite ends of said spiral spring to alternatively release it.

21. In a typewriting machine, the combination of a traveling carriage, a drum or housing connected to said shaft, a main spring coiled within said drum and connected thereto at its outer end, a shaft for said drum to which the inner end of said main spring is connected, a bearing for said shaft having a cylindrical portion, a spiral locking spring surrounding said cylindrical portion and frictionally engaging therewith, a rotary shell or thumb button housing said friction spring and connected to the inner end thereof, and a slotted head fixed to said shaft and connected to the outer end of said spiral spring.

22. In a typewriting machine, the combination of a traveling carriage, a spring

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drum connected to said carriage, a main spring housed by said drum and connected thereto, a shaft to which said main spring is also connected, a clutch spring normally holding said shaft from turning, and separate rotary devices concentrically mounted and independently operative on the opposite ends of said clutch spring for releasing said clutch spring to afford rotation of said shaft to vary the tension of said main spring. 10

Signed at the borough of Manhattan, city of New York, in the county of New York, and State of New York, this 7th day of July, A. D. 1922.

JOSEPH PHELPS.