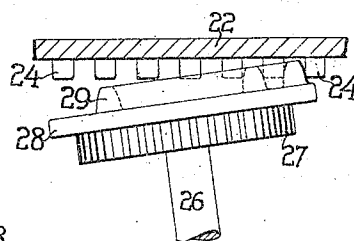
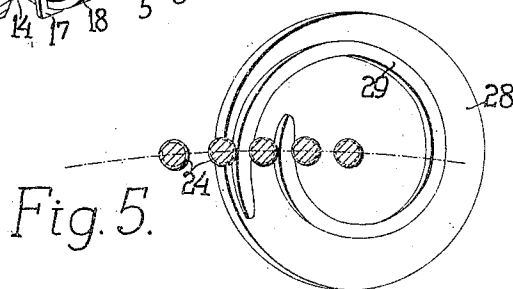
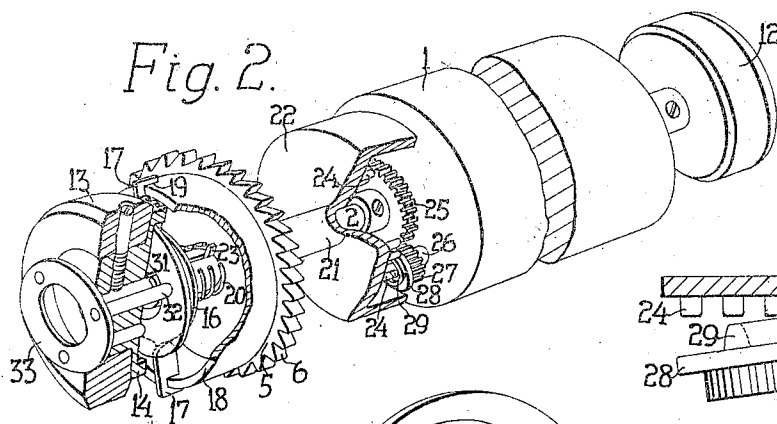
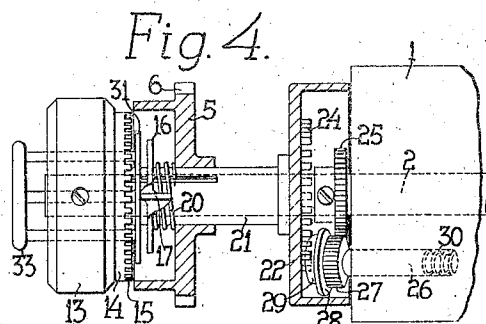
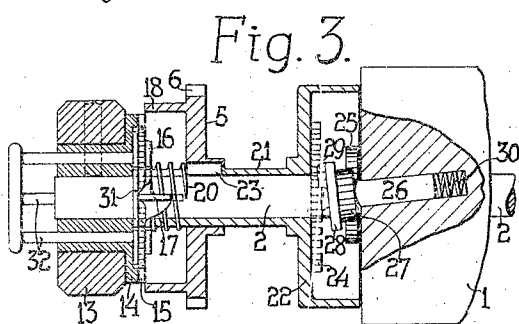
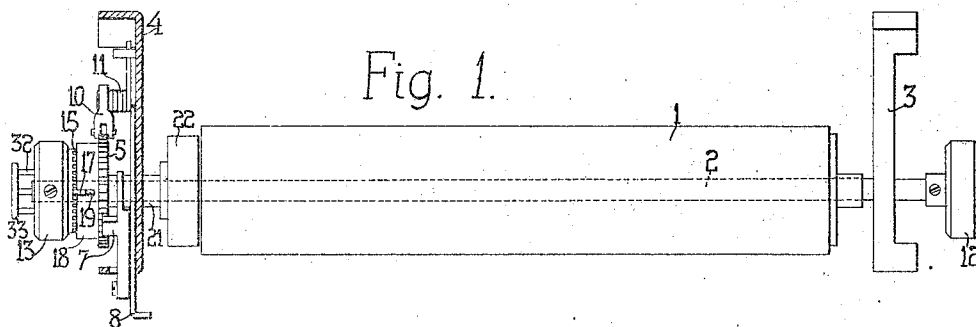


J. K. LUX.
TYPE WRITING MACHINE.
APPLICATION FILED SEPT. 9, 1910.

1,056,703.

Patented Mar. 18, 1913.



Witnessed.
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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,056,703.

Specification of Letters Patent.

Patented Mar. 18, 1913.

Application filed September 9, 1910. Serial No. 581,253.

To all whom it may concern:

Be it known that I, JULIUS K. LUX, a citizen of the United States, residing in Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

The present invention relates to type-writing machines in which the platen roll is adjustable, independently of the line-spacing wheel, by means of a hand wheel or other device suitably connected to the platen.

The present invention relates to machines in which a train of gearing connects the platen to the line-space wheel, which train is operated by a hand wheel, to effect fine adjustments of the platen while the line-space wheel remains stationary.

I provide a simple means for normally locking the line-space wheel to the platen and unlocking the same when adjustment of the platen is desired, the line-space wheel being positively and automatically locked to the feed wheel after each adjustment. I provide a locking means of this character, which in connecting the platen to the line space wheel after the adjustment, does not disturb the adjustment, and is positive in action, and renders impossible that play or loose movement between the parts which has heretofore so often impaired the alignment of the printing.

Another object of the invention is to so simplify the mechanism that no adjusting device is necessary other than the hand wheel commonly carried by the platen shaft.

Other features of the invention are found in the mechanism by means of which the hand wheel and the line space wheel operate together to turn the platen at one speed for the ordinary line-spacing movement, and by means of which the hand wheel is operated while the line space wheel remains stationary, to turn the platen at a slower speed for purposes of adjustment.

In the accompanying drawings, Figure 1 is a top plan view of the platen and attached parts for effecting its line spacing and adjustment, the platen being shown mounted in frame members of the machine. Fig. 2 is a perspective of the platen and attached parts, certain of the parts being broken for clearer illustration of the struc-

ture. Fig. 3 is a view taken diametrically through the feeding and adjusting mechanism on the platen shaft, and through a portion of the end of the platen, the parts being shown in normal position. Fig. 4 is a view similar to Fig. 3 except that the adjusting wheel is shown in side view, and the parts in position to permit of adjustment of the platen independently of the line space wheel. Fig. 5 is a face view of the scroll or cam device and intermeshing toothed wheel for adjusting the platen. Fig. 6 is a side view of the scroll, the gear by which it is driven, and a portion, in cross section, of the toothed wheel.

Referring to the drawings, the platen 1 is shown loosely mounted on shaft 2 which has bearing at either end in frame members 3 and 4 of the machine. Also loosely mounted on the shaft 2 is the line-spacing or feed wheel 5 having teeth 6 to be engaged and driven by a dog 7, so that the wheel may be rotated one or more steps in the usual manner.

A suitable spring normally holds dog or pawl carrying member 8 in such position that the dog 7 is out of engagement with the teeth of the line space wheel. A detent 10, pressed against the wheel 7 by a spring 11, holds the wheel in set position against accidental displacement. Fast to the shaft or axle 2 are the hand wheels 12 and 13, one at each end of the shaft. The hand wheel 13 has a flange 14 which has a toothed or serrated edge 15. Loosely mounted on the shaft 2 is a disk 16, from the periphery of which at diametrically opposite points protrude two bits or keys 17 disposed perpendicularly to the face of the disk. The line space wheel 5 carries a flange 18 and two slots or key ways 19, which are cut parallel to the shaft and receive the bits, locks or teeth 17 of the disk 16, so that normally the disk 16 and line space wheel must turn together on the shaft 2 when either is turned. The disk 16 is free to have a certain longitudinal movement on the shaft 2, and the bits 17 have similar movement in the slots 19. A coil spring 20 which bears at one end against the face of the line-space wheel and at the other end against the face of the disk, tends to force the disk toward the hand wheel 13 in such manner that the bits 17 on the disk engage the toothed member 15. The bits 17 are of such size that,

whatever the position of the disk on the shaft, the detents are never out of the slots or keyways 19 of the line space wheel. When therefore the bits 17 are forced by the spring 20 into engagement with the toothed flange of the hand wheel, the latter is keyed or locked to the line space wheel, and both must rotate together. This is the normal relation of the parts, and is as shown in Figs. 1 and 3.

The feed wheel is connected to the platen in the following manner. Loosely mounted on the shaft 2 is a sleeve 21 having fast thereto a disk or wheel 22. The sleeve 21 is fastened to the line space wheel 5 by means of a key 23, so that both must move together. On one face of the disk 22 is a ring of teeth 24 concentric with the shaft 2. Fast to the shaft 2 is a pinion 25. Fast to an eccentric stud or shaft 26 loosely mounted to rotate in the end of the platen, at a distance from the axle 2, is a pinion 27, which intermeshes with and is rotatable by the pinion 25; the axle 2 being revoluble independently of the platen. Also fixed on the stud 26 is a disk or plate 28 which carries on its outer face a spiral cam or convolute scroll 29. A spring 30 bearing on the inner end of the stud 26 holds the cam in yielding engagement with the teeth 24 on the wheel 22. The cross section of the cam resembles a gear tooth, and, as shown in Figs. 5 and 6, is such as to permit the turns of the spiral to enter between adjacent teeth 24 and be engaged by the latter. The spiral describes an arc of more than 360 degrees, and its overlapping ends are spaced substantially the diameter of one of the teeth 24. When therefore the spiral is turned in its bearing in a manner hereafter to be described, some portion of it is always engaged on both sides by teeth 24, and if the platen be free to turn on the shaft 2, the cam, by engaging successive teeth 24, as the stud 26 rotates, will move around the circle of the teeth 24 and carry with it the platen. The yielding engagement of the cam with the teeth as provided by the spring 30 permits of a prompt take-up and movement of the cam to compensate for any wear or lack of perfection of the engaging parts.

It has been stated that the line-space wheel is normally locked to the hand wheel 13, and consequently to the shaft 2, by means of the bits 17. This is the position of the parts for turning the platen predetermined spacing distances regulated by the teeth 6 of the line space wheel. If in this setting, the line space wheel 5 is moved, either by the hand wheel or by the rod 8, the following parts, which are then locked together, all have the same angular movement, to wit: the line space wheel 5, the hand wheel 13, the shaft 2, the toothed wheel 22, and the pinion 25. As shown in Fig. 5,

the arc of the circle of the teeth 24, and the spiral 29 intersect substantially at right angles. The movement of the wheel 22 therefore causes the teeth 24 to bear directly against the cam, so that the cam is carried bodily by the wheel a distance according to the number of teeth 6 the feed wheel is advanced. Since the wheel 22, the pinion 25, and the cam are thus turned together the same angular distance with the shaft 2, there is no rotation of the stud 26 or spiral in its bearing in the platen. The platen is therefore turned as a unit with the line space wheel when the latter is locked by the bits 17 to the hand wheel and shaft. This occurs when it is desired to move the platen backward or forward the regular spacing distances.

For purposes of proper alinement or for other reasons, it is often, however, necessary to move the platen a small distance only, and in such event a fine and exact adjustment of the platen independently of the line space wheel is desirable. To this end the platen is disconnected from the line space wheel. The bits 17 which are normally in engagement with the line-space wheel are removed from the hand wheel by a longitudinal movement of the disk 16 on the shaft 2 against the action of the spring 20. This movement of the disk 16 is effected by means of a ring or plate 31 which lies between the disk 16 and the hand wheel 13 and which is carried by pins 32. The pins 32 project through the hand wheel, and have a sliding bearing in the latter. At their outer ends they carry a plate 33. By pressing the plate 33 toward the hand wheel, the disk 31 is made to move the disk 16 to the position shown in Fig. 4, where, it will be noted, the bits 17 no longer engage the serrated edge of the hand wheel. When the pressure is removed from the plate 33, the spring 20 returns the parts to Fig. 3 position. If, while the disk 16 and bits 17 are in the Fig. 4 position, either hand wheel 12 or 13 is turned, the shaft is of course turned and with it the pinion 25 which is fast to the shaft. Since the pinion 27 intermeshes with the pinion 25, the stud 26 and spiral cam 29 are rotated. At this time the line space wheel 5 is held stationary by the spring pawl 10 so that the sleeve 21 and toothed wheel 22 are also stationary. The rotation of the scroll therefore causes the spiral to engage successively the teeth 24, and the scroll plate 28 and attached parts to move or creep around the then stationary plate 22, and the shaft 2; the parts advancing on each complete revolution of the scroll 29, a distance equal to the distance between two adjacent teeth 24. The platen by reason of the stud 26 which connects it to the scroll, turns as the scroll picks up tooth after tooth on the plate 22. A large movement of the hand

wheel and shaft therefore results in but small movement of the platen, and great exactness in adjustment of the latter is consequently possible. After the desired adjustment has been effected, the plate 33 is released, and the spring 20 thereupon forces the bits 17 again into engagement with the hand wheel to connect the hand wheel to the shaft 2. The bits 17 and the serrations or teeth 15 on the hand wheel are sufficiently fine to permit the platen to be locked to the line space wheel in practically the precise adjustment for which the platen has been set.

It will be noted that the same hand wheel 13 may be used both for the ordinary line-spacing movement of the platen with the line space wheel, and for the adjustment of the platen independently of the line space wheel.

It is particularly to be noted that the connection between the line space wheel and the hand wheel is positive and is effective, after any desired adjustment of the platen, to hold the wheels in proper relation. No play or free movement of the platen, such as might cause defects in a movement of letters, is possible in the present invention. It will be observed that in this form of the invention a crown-toothed wheel is engaged with a spiral cam, so that when the spiral cam is turned, it causes the crown wheel to move one tooth for each complete revolution of the spiral cam. The spiral cam also may be capable of movement in the direction of its axis, and a spring may always urge the cam into engagement with the crown toothed wheel. The working faces of the spiral cam are wedged in between the teeth of the crown toothed-wheel with a given yielding stress from the spring, giving free movement and perpetual take up for wear and lack of perfection in the parts. The cam is driven by a gear fixed to the axle of the cylinder; both platen knobs or handles being fixed to the axle. The cam is set at an incline to the crown wheel 24, to permit it to clear the latter at the right-hand side of the cam at Fig. 5. A latch unites and disunites the platen knobs from the line spacing wheel.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a typewriting machine, a platen roll, a shaft on which the platen is mounted, a line spacing wheel loosely mounted on said shaft for turning the platen, means for holding the line space wheel at uniformly spaced points of its path of rotation, a hand wheel fast to said shaft for turning the platen, and a latch or device loosely mounted on said shaft and movable longitudinally thereon for positively locking the line space wheel

to the hand wheel, and for disconnecting the line space wheel from the hand wheel, so that the hand wheel may be actuated with the line space wheel to turn the platen or may be actuated with the platen independently of the line space wheel; said locking device being normally in engagement with both the line space wheel and the hand wheel but being disengageable from the hand wheel by longitudinal movement on the shaft.

2. In a typewriting machine, a platen roll, a shaft on which the platen is mounted, a line spacing wheel loosely mounted on said shaft for turning the platen, means for holding the line space wheel at uniformly spaced points of its path of rotation, a hand wheel fast to said shaft for turning the platen, and a latch or device loosely mounted on said shaft and movable longitudinally thereon for positively locking the line space wheel to the hand wheel, and for disconnecting the line space wheel from the hand wheel, so that the hand wheel may be actuated with the line space wheel to turn the platen or may be actuated with the platen independently of the line space wheel; said locking device being normally in engagement with both the line space wheel and the hand wheel but being disengageable from the hand wheel by longitudinal movement on the shaft, and a spring for automatically moving the locking device to normal position.

3. In a typewriting machine, a platen roll, a shaft on which the platen is mounted, a line spacing wheel loosely mounted on said shaft for turning the platen, means for holding the line space wheel at uniformly spaced points of its path of rotation, a hand wheel fast to said shaft for turning the platen, and a latch or device loosely mounted on said shaft and movable longitudinally thereon for positively locking the line space wheel to the hand wheel, and for disconnecting the line space wheel from the hand wheel, so that the hand wheel may be actuated with the line space wheel to turn the platen or may be actuated with the platen independently of the line space wheel; said locking device being normally in engagement with both the line space wheel and the hand wheel but being disengageable from the hand wheel by longitudinal movement on the shaft, and a spring for automatically moving the locking device to normal position, and means for moving said locking device against the action of said spring to release the hand wheel from the line space wheel.

4. In a typewriting machine, a platen roll, a line-spacing wheel for turning the platen, means for holding the line space wheel at uniformly spaced points of its path of rotation, a hand wheel for turning the platen, a shaft on which the line space wheel and hand wheel are mounted, a blade in the

plane of the axis of the shaft and mounted to have movement longitudinally of the shaft, the line space wheel having a slot into which the blade extends, and the hand wheel having a serrated edge to receive the blade in any position of the hand wheel, and means for moving the blade into and out of engagement with the hand wheel, so that the line space wheel and hand wheel may be connected and disconnected to move together with the platen or to move the platen independently of the line space wheel.

5. In a typewriting machine, a platen roll, a shaft on which the roll is loosely mounted, means for driving the platen from said shaft, a line spacing wheel loosely mounted on said shaft, a hand wheel fast to said shaft, and means for positively connecting the line space wheel to the hand wheel in any position of the latter and for releasing the line space wheel from the hand wheel to permit the platen to be turned independently of the line space wheel.

6. In a typewriting machine, a platen roll, a shaft on which the roll is loosely mounted, means for driving the platen from said shaft, a line spacing wheel loosely mounted on said shaft, a hand wheel fast to said shaft, and means for positively connecting the line space wheel to the hand wheel, said connecting means being permanently engaged by the line space wheel, and the hand wheel having means whereby it may be engaged in any position by said connecting means.

7. In a typewriting machine, a platen roll, a shaft on which the roll is loosely mounted, a gear fast to the shaft, a toothed element loose on the shaft, a gear carried by the platen at a distance from the shaft and co-operating on the one hand with the gear on the shaft and on the other hand with the toothed element; so that when the toothed element is stationary and the gear on the platen is revolved from the shaft, the toothed gear, by engagement with the toothed element, is caused to move with the platen around the shaft, and when the toothed element is revolved with the shaft, it carries with it the gear with which it co-operates and the platen on which such gear is mounted; a line-spacing wheel carried by said toothed element; means for holding said wheel stationary at uniformly spaced points of its path of revolution, and means for positively locking the line space wheel to the shaft and for disconnecting it from the shaft so that it may be held stationary.

8. In a typewriting machine, a platen roll, a shaft on which the roll is loosely mounted, a pinion fast to the shaft, a wheel loose on the shaft having teeth arranged around the same concentric with the shaft, a pinion carried by the platen at a distance from the shaft meshing with the pinion on the shaft, a spiral cam fast to the platen pinion, said

cam cooperating with the teeth of the toothed wheel; so that when the toothed wheel is stationary and the cam revolved; the cam creeps around the toothed element and carries with it the platen; and when the toothed wheel is revolved, it carries with it the cam and platen; a line-spacing wheel carried by the toothed wheel, means for holding the line space wheel stationary at uniformly spaced points of its path of rotation, and means for positively connecting the line space wheel to the shaft and for disconnecting it from the shaft.

9. In a typewriting machine, a platen roll, a shaft on which the roll is loosely mounted, a pinion fast to the shaft, a wheel loose on the shaft having teeth arranged around the same concentric with the shaft, a pinion carried by the platen at a distance from the shaft, meshing with the pinion on the shaft, a spiral cam fast to the platen pinion, a spring for holding the cam in yielding engagement with the teeth of the toothed wheel, a line-spacing wheel connected to the toothed wheel, means for holding the line space wheel stationary at uniformly spaced positions of its path of movement, and means for connecting the line space wheel to the shaft and for disconnecting it from the shaft.

10. In a typewriting machine, a platen roll, a line-spacing wheel for turning the platen, a shaft on which the line space wheel is loosely mounted, a hand wheel fast to said shaft for adjusting the platen, a driving connection from the line space wheel to the platen, and a driving connection from the hand wheel to the platen, means mounted on the shaft between the hand wheel and line space wheel for normally locking the hand wheel to the line space wheel but movable longitudinally of the shaft away from the hand wheel to disconnect the wheels, a spring for holding the locking device in normal position and for returning the same to normal position, a slide mounted to have bearing in the hand wheel and movable therein in the direction of the shaft, and a plate on the inner end of said slide, against which plate the spring holds the locking device, so that when the plate is moved against the action of the spring, the locking device is moved thereby to disconnect the wheels.

11. The combination with a platen and a loose axle therefor having a finger wheel, of a line-space wheel, a crown gear united to said line space wheel, a scroll journaled eccentrically on the platen and inclined to the platen shaft and engaging said gear, a pinion being provided on said scroll, and a pinion on the platen shaft to mesh with the scroll pinion.

12. The combination with a platen and a loose axle therefor having a finger wheel, of a line-space wheel, a crown gear united to

said line space wheel, a scroll journaled eccentrically on the platen and inclined to the platen shaft and engaging said gear, a pinion being provided on said scroll, a pinion 5 on the platen shaft to mesh with the scroll pinion, and a spring to press the scroll into engagement with said crown gear.

13. The combination with a platen and a line space wheel, of means for producing a 10 relative creeping movement between the platen and the line space wheel, comprising a gear and a convolute scroll mounted eccentrically of the gear, the scroll being inclined to the gear to clear the same where necessary. 15

14. The combination with a platen and a line-space wheel, of means for producing a relative creeping movement between the platen and the line-space wheel, comprising 20 a gear and a convolute scroll mounted eccentrically of the gear, the scroll being inclined to the gear to clear the same where necessary, and a spring to press the scroll into engagement with the gear.

15. The combination with a platen and a line-space wheel relatively revoluble, of a loose shaft or axle for the platen, a finger wheel on said shaft, a notched wheel, a tooth 25 to engage the same, the notched wheel and tooth releasably connecting said axle to said line-space wheel, and a train of movement-reducing gearing between said axle and the platen, whereby the platen may be positively reconnected to the line-space wheel at 30 intervals much more minute than the intervals at which the notches are formed in said wheel.

16. The combination with a platen and a loose axle therefor having a finger wheel, of 40 a line space wheel, a crown gear united to said line space wheel, a scroll journaled eccentrically on the platen and inclined to the platen shaft and engaging said gear, a pinion being provided on said scroll, a pinion 45 on the platen shaft to mesh with the scroll pinion, a notched wheel, and a tooth to engage the same, to connect the line-space wheel releasably to said axle.

17. The combination with a platen and a line-space wheel, of a connecting train between them, comprising a gear, a convolute scroll engaging said gear, and means for rotating said scroll to effect relative rotation 50 between the platen and line-space wheel.

18. The combination with a platen and a line-space wheel, of a connecting train between them comprising a gear, a convolute scroll engaging said gear, and a shaft or axle having a finger wheel for operating 55 said scroll.

19. The combination with a platen and a

line-space wheel, of a connecting train between them comprising a gear, a convolute scroll engaging said gear, and a shaft or axle having a finger wheel for operating 60 said scroll, the latter having a pinion to mesh with a pinion on said shaft or axle.

20. The combination with a platen and a line-space wheel, of a connecting train between them, comprising a gear, a scroll engaging said gear, and means for rotating 70 said scroll to effect relative rotation between the platen and line-space wheel, said gear being in the form of a crown gear, and said scroll inclined to the axis of the platen to clear the teeth of the gear where necessary. 75

21. The combination with a platen and a line-space wheel, of a connecting train between them comprising a gear, a scroll engaging said gear, and a shaft or axle having 80 a finger wheel for operating said scroll, said scroll having a pinion to mesh with a pinion on said shaft or axle, said gear being in the form of a crown gear, and said scroll inclined to the axis of the platen to 85 clear the teeth of the gear where necessary.

22. The combination with a platen and a line-space wheel, of a connecting train between them, comprising a gear, a scroll engaging said gear, and means for rotating said 90 scroll to effect relative rotation between the platen and line-space wheel, said scroll journaled eccentrically to the axis of the platen and inclined to said axis to clear said gear where necessary. 95

23. The combination with a platen and a line-space wheel, of a notched or toothed wheel, gearing to connect the notched wheel in such a manner that many revolutions of the notched wheel will effect only a single 100 relative revolution between the platen and the line-space wheel, and means releasably interlocking with said notched wheel to lock the platen to the line-space wheel, whereby the platen may be positively re-connected 105 to the line-space wheel at intervals much more minute than the intervals at which the notches are formed in said wheel.

24. The combination with a platen and a line-space wheel, of a connecting train between them comprising a gear, a scroll engaging said gear, a shaft or axle having a finger wheel for operating said scroll, a notched wheel, and a tooth cooperating therewith to releasably connect said shaft 115 or axle, to enable the line-space wheel and platen to revolve as a unit.

JULIUS K. LUX.

Witnesses:

K. FRANKFORT,

C. RIPLEY.