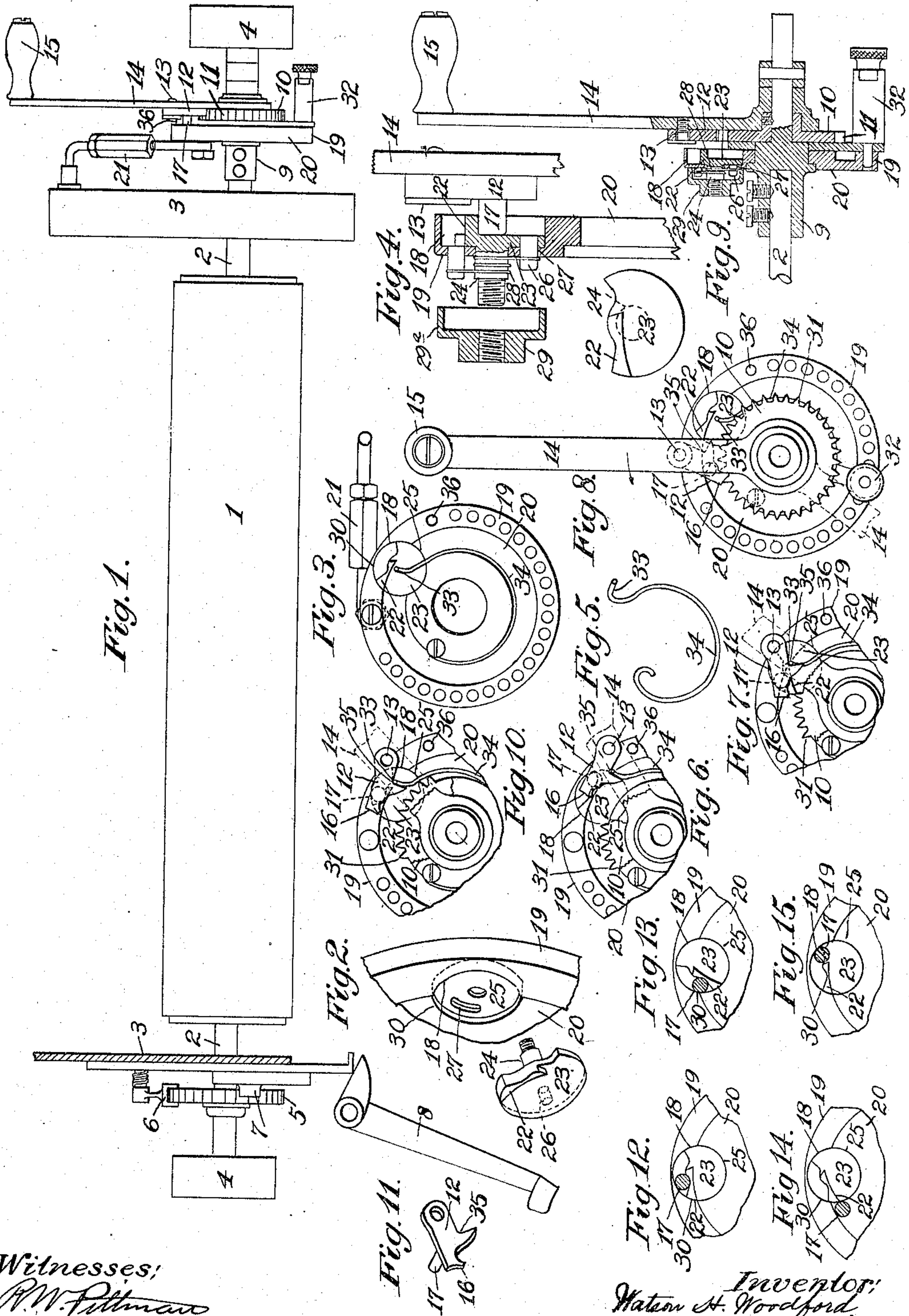


W. H. WOODFORD.
TYPE WRITING MACHINE.
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923,749.

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UNITED STATES PATENT OFFICE.

WATSON H. WOODFORD, OF HARTFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPE-
WRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPE-WRITING MACHINE.

No. 923,749.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WATSON H. WOODFORD, a citizen of the United States, residing in Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to means for securing blank spaces between the carbon entries of successive bills on an entry sheet in the operation of "condensed billing", and is in the nature of an improvement upon the mechanism disclosed in the application of L. D. Broughton No. 436,534, filed June 4, 1908. In said application, a crank is mounted loosely upon the platen axle, and a pawl is pivoted upon the crank to engage a notched wheel fixed to the platen; a latch or trip normally holding the pawl out of engagement with the wheel. A movement of the crank throws the pawl into engagement with the wheel, such engagement being mechanically maintained during the rotation of the platen by the crank and until the latter is swung back to normal position. A spring then throws the pawl out of engagement with the wheel. In said application, the crank-operating pawl is caused to skip one or more notches or teeth of the wheel during the initial stroke of the crank. The engagement of the dog with said wheel is however maintained during the entire return movement of the crank to normal position, so that the forward rotation of the platen effected by said wheel is greater than the backward rotation thereof. Thus the platen is caused to turn backwardly a relatively short distance to receive a bill, and then forwardly a relatively long distance to bring the bill to printing position.

The object of the present invention is to simplify and improve the construction and operation of the latch or trip mechanism, which causes the dog or pawl to skip the teeth of the notched wheel to effect the spacing between the successive bills on the carbon sheet.

In the accompanying drawings, Figure 1 is a plan of a portion of the platen frame and platen of an Underwood front strike writing machine showing my improvements applied thereto. Fig. 2 is a perspective view of the latch and its seat. Fig. 3 is an elevation or face view of the disk, upon which the latch is

mounted. Fig. 4 is an enlarged sectional elevation of the components of the latch mechanism. Fig. 5 is a view of the spring to release the pawl from the toothed wheel. Fig. 6 is a diagram showing the spring causing the pin on the pawl to enter a recess in the disk. Fig. 7 is a diagram showing the main lever or crank moved a little forwardly from normal position. Fig. 8 is an end elevation showing the pin engaging an annular rim in the disk, and the pawl in engagement with the notched wheel, which is being turned by the crank. Fig. 9 is a sectional view of the devices seen at Fig. 8. Fig. 10 is a view like Fig. 7 but showing the parts in normal positions. Fig. 11 is a perspective view of the pawl. Figs. 12 to 14 show diagrammatically the escape of the pawl-pin from the latch at the beginning of the first stroke of the crank. Fig. 15 shows the position of the parts at the end of the return stroke of the crank.

The usual platen 1 of an Underwood type-writing machine is rotatably mounted by means of an axle 2 in the ends 3 of the platen frame, the end of the axle projecting through the end of the platen frame end and having finger wheels 4 thereon, by means of which the platen may be rotated forwardly or backwardly to an unlimited extent. The platen is also provided with the usual toothed line-space wheel 5, which is engaged by a yielding detent 6 to hold the platen steady when writing. The line-space wheel is advanced intermittently by means of a pawl 7 and a lever 8.

Upon the end of the platen axle 2 is fixed a hub 9 of a wheel 10 having teeth 11 corresponding in number to the teeth of the line-space wheel 5. The wheel 10 is rotated by means of a pawl or dog 12 pivoted at 13 upon a crank 14 having a finger piece 15. The tooth 16 of the pawl is normally disengaged from the wheel 10, as at Fig. 10, to permit independent rotation of said wheel and platen. A pin 17 projecting from the pawl 12 normally occupies a segmental recess 18 in an annular rim 19, the latter provided upon a disk 20, which is connected by a tie-rod 21 to the platen frame end 3. The pin 17 normally overlies a trip or latch 22 formed upon the side of a small disk 23, having a pivot or stem 24, whereby it is mounted in a circular recess 25 formed in the fixed disk 20. The small disk 23 has a pin 26 to engage a slot 27 in the fixed disk 20, to limit the oscillating

movements of the small disk and hence of the latch or trip thereon. A spring 28 is coiled about the stem 24 and engages the pin 26 to return the trip-disk to normal position. The threaded stem 24 has a nut 29, in the form of a cap to inclose the pin 26 and spring 28 and to hold the latch or trip mechanism in place.

When the crank 14 is swung forwardly, the pin 17 rides down the forward inclined edge 30 of the recess 18, and presses down upon the trip 22, causing the trip-disk 23 to oscillate, Figs. 13 and 14; and the tooth 16 of the pawl is caused to engage a tooth 11 of the wheel 10, the pawl moving from the Fig. 7 to the Fig. 8 position. The pawl is held in engagement with the toothed wheel by means of the pin 17, which rides along the inner side of the annular rim 19. As soon as the pin 17 leaves the recess 18, the trip is returned to normal Fig. 10 position by means of the spring 28. The continued forward movement of the crank 14 swings the wheel 10 and platen 1 around until the crank is arrested by an adjustable stop 32, Fig. 8. The crank is then swung backwardly together with the wheel 10 and the platen; but the backward movement of the wheel and platen is prolonged beyond the forward end of the recess 18, by reason of the pin 17 riding along the under side of the trip 22, which forms a continuation of the annular rim 19. When the pin 17 approaches the end of said trip 22, a finger 33 on a spring 34, which is secured upon the fixed disk 20, engages a notch or recess 35 formed in the pawl 12, and springs said pawl away from the toothed wheel 10 and causes the pin 17 to reënter the recess 18. The return stroke of the crank is limited by a stop 36.

It will be seen that the latch device is exceedingly compact, so that it takes up very little room circumferentially on the fixed annular guard-member 19. It does not project from the face of the fixed member, and it is securely held in place by a small device 29 placed out of the way upon the opposite side of said fixed member, while provision is made for a latch-spring by simply coiling a wire about the latch-shank 24 and connecting it to the projection 26 which extends through the slot 27 and also serves as a stop to limit the oscillation of the latch-disk 23; the securing nut 29 being formed with a cap-portion 29^a to inclose the spring and projecting pin 26. The parts are simple in construction and easily applied to the fixed member 19, and the latter is easily and cheaply formed to receive said parts.

Having thus described my invention, I claim:

1. In a typewriting machine having a platen frame, a revoluble platen, a notched wheel to rotate therewith, and a fixed member upon the platen frame having a recess

and provided with an annular rim into which said recess extends, the combination with a crank mounted to turn about the axis of the notched wheel, of a pawl pivoted upon the crank and provided with a pin to engage the under side of the rim to hold the pawl in engagement with the notched wheel, a spring upon the fixed member to engage the pawl to release it from the wheel and cause the pin to enter the recess in said rim at the termination of the return stroke of the crank; and an oscillating disk occupying said recess and formed with a latch to engage the pin to hold the pawl out of engagement with the wheel, and cause the pawl to skip a tooth of the wheel, the under surface of the latch forming a continuation of the under side of the rim, to engage the pin and prolong the engagement of the pawl with the wheel, and a space being left between the end of the latch and the side of the recess in the rim, to permit the pawl pin to enter the recess.

2. In a typewriting machine having a platen frame, a revoluble platen, a notched wheel to rotate therewith, and a fixed member upon the platen frame having a recess and provided with an annular rim into which said recess extends, the combination with a crank mounted to turn about the axis of the notched wheel, of a pawl pivoted upon the crank and provided with a pin to engage the under side of the rim to hold the pawl in engagement with the notched wheel, a spring upon the fixed member to engage the pawl to release it from the wheel and cause the pin to enter the recess in said rim at the termination of the return stroke of the crank, an oscillating disk occupying said recess and formed with a latch to engage the pin to hold the pawl out of engagement with the wheel, and cause the pawl to skip a tooth of the wheel, the under surface of the latch forming a continuation of the under side of the rim, to engage the pin and prolong the engagement of the pawl with the wheel, and a space being left between the end of the latch and the side of the recess in the rim, to permit the pawl pin to enter the recess, said disk having a screw-threaded stem whereby it is pivotally mounted in said fixed member, a pin secured upon the disk to engage a slot in the fixed member to limit the oscillating movement of the latch, a spring coiled about the stem and engaging said pin to return the latch to normal position, and a nut in the form of a cap to screw upon said stem to hold the latch mechanism in place.

3. In a typewriting machine having a platen frame, a revoluble platen, a notched wheel to rotate therewith, and a fixed member upon the platen frame having a recess and provided with an annular rim into which said recess extends, the combination with a crank mounted to turn about the axis

of the notched wheel, of a pawl pivoted upon the crank and provided with a pin to engage the under side of the rim to hold the pawl in engagement with the notched wheel, a
 5 spring upon the fixed member to engage the pawl to release it from the wheel and cause the pin to enter the recess in said rim at the termination of the return stroke of the crank, an oscillating disk occupying said re-
 10 cess and formed with a latch to engage the pin to hold the pawl out of engagement with the wheel, and cause the pawl to skip a tooth of the wheel, the under surface of the latch forming a continuation of the under side of
 15 the rim, to engage the pin and prolong the engagement of the pawl with the wheel, and a space being left between the end of the latch and the side of the recess in the rim, to permit the pawl pin to enter the recess, said
 20 disk having a pivot-shank journaled in a hole in said fixed member and extending therethrough, and means engaging said shank upon the opposite side of said fixed member to retain said disk in said recess.

25 4. In a typewriting machine having a platen frame, a revoluble platen, a notched wheel to rotate therewith, and a fixed member upon the platen frame having a recess and provided with an annular rim into which
 30 said recess extends, the combination with a crank mounted to turn about the axis of the notched wheel, of a pawl pivoted upon the crank and provided with a pin to engage the under side of the rim to hold the pawl in en-
 35 gagement with the notched wheel, a spring upon the fixed member to engage the pawl to release it from the wheel and cause the pin to enter the recess in said rim at the termination of the return stroke of the crank, an os-
 40 cillating disk occupying said recess and formed with a latch to engage the pin to hold the pawl out of engagement with the wheel, and cause the pawl to skip a tooth of the wheel, the under surface of the latch forming
 45 a continuation of the under side of the rim, to engage the pin and prolong the engagement of the pawl with the wheel, and a space being left between the end of the latch and the side of the recess in the rim, to permit the pawl
 50 pin to enter the recess, said disk having a pivot-shank journaled in a hole in said fixed member and extending therethrough, means

engaging said shank upon the opposite side of said fixed member to retain said disk in said recess, and a spring coiled around the
 55 projecting portion of said shank and engaging a projection which extends from said disk through a slot in the fixed member and also serves as a stop to limit the rotation of the
 60 disk.

5. In a typewriting machine having a platen frame, a revoluble platen, a notched wheel to rotate therewith, and a fixed member upon the platen frame having a recess and provided with an annular rim into which
 65 said recess extends, the combination with a crank mounted to turn about the axis of the notched wheel, of a pawl pivoted upon the crank and provided with a pin to engage the under side of the rim to hold the pawl in en-
 70 gagement with the notched wheel, a spring upon the fixed member to engage the pawl to release it from the wheel and cause the pin to enter the recess in said rim at the termination of the return stroke of the crank, an os-
 75 cillating disk occupying said recess and formed with a latch to engage the pin to hold the pawl out of engagement with the wheel, and cause the pawl to skip a tooth of the wheel, the under surface of the latch forming
 80 a continuation of the under side of the rim, to engage the pin and prolong the engagement of the pawl with the wheel, and a space being left between the end of the latch and the side of the recess in the rim, to permit the pawl
 85 pin to enter the recess, said disk having a pivot-shank journaled in a hole in said fixed member and extending therethrough, means engaging said shank upon the opposite side of said fixed member to retain said disk in
 90 said recess, and a spring coiled around the projecting portion of said shank and engaging a projection which extends from said disk through a slot in the fixed member and also serves as a stop to limit the rotation of the
 95 disk, said retaining means in the form of a nut threaded upon the tip of the shank and having a cap-portion to inclose the spring and the projecting stop-pin.

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Witnesses:

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