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TYPEWRITING MACHINE

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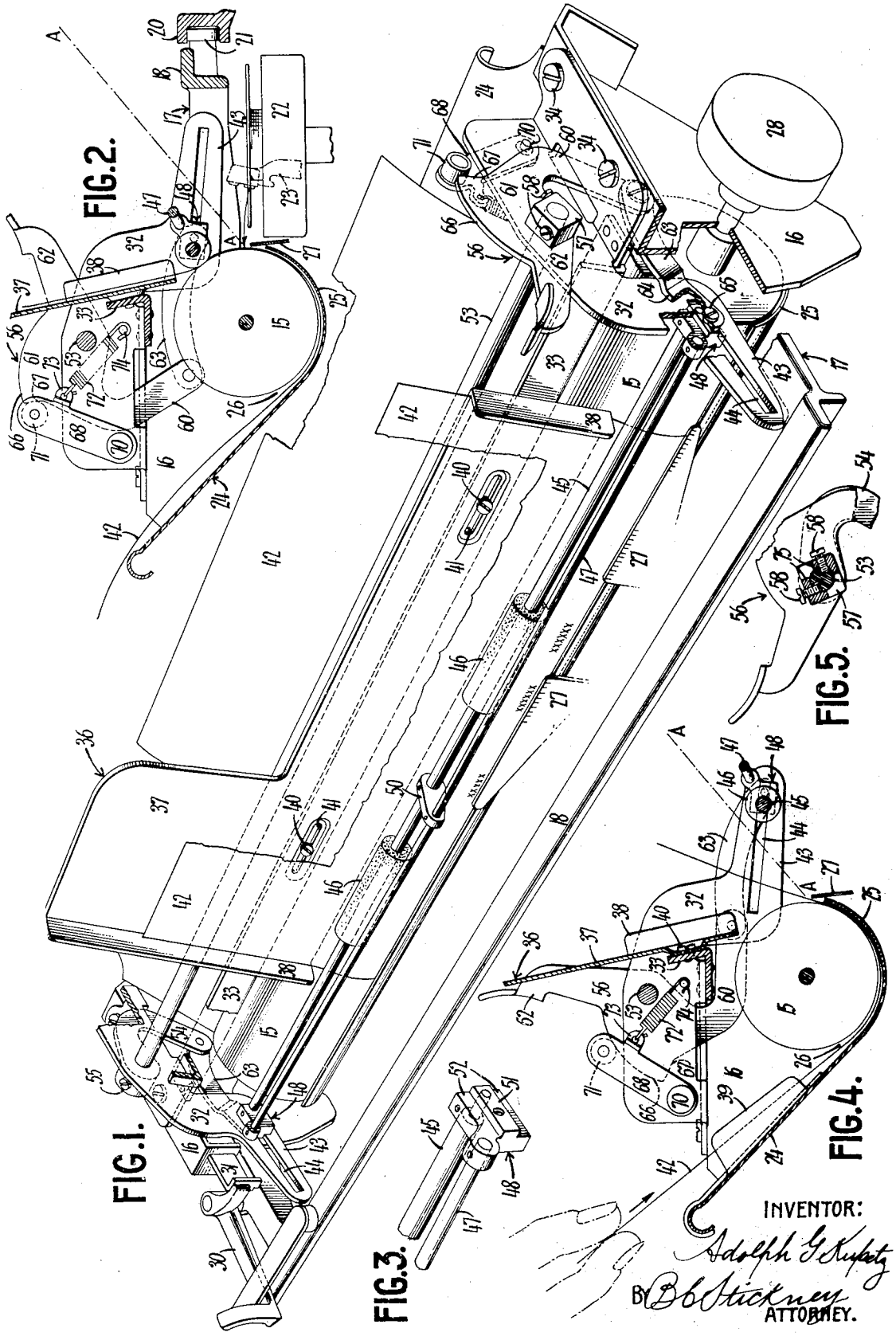


FIG.1.

FIG.2.

FIG.3.

FIG.4.

FIG.5.

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TYPEWRITING MACHINE

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18 Claims. (Cl. 197—127)

This invention relates to paper feeding and guiding means for typewriting machines.

In making typewritten entries on such work-pieces as monthly statement-sheets for example, it is desirable that the labor entailed in feeding the work-pieces into the machine be reduced to a minimum, because, as the entries made on such sheets are generally short, a large proportion of the total time required for such an entry is spent non-productively, in inserting and removing the work-piece.

An object of this invention is to provide a work-piece feeding and guiding device which will facilitate the insertion and removal of such work-pieces. It is a further object to make such a device which can be applied, as a unit, to standard or already existing machines without appreciable alteration.

In this invention, brackets, which support feed-roll control means and a work-piece-guiding table, are mounted on the carriage end-plates. Each bracket has an extension projecting downwardly and forwardly of the platen above the printing-point, the said extensions having guideways in which end-blocks, supporting a feed-roll-shaft structure, are slidably secured. A rock-shaft, journaled in the said brackets, is provided with arms which are pivotally linked to the feed-roll-shaft end-pieces.

To preferably the right-hand end of the rock-shaft, a finger-lever is attached. Both of said arms are rotated in unison, by means of said rock-shaft, thus evenly projecting the feed-roll shaft forwardly away from, or rearwardly in engagement with, the platen. The finger-lever is formed with a camming surface to co-operate with a roller-bearing spring-detent, which yieldably holds the feed-roll shaft in either its operative or released position. The arrangement of the cam and detent is such that only a light pressure, of limited duration, is necessary to accomplish the full movement of the feed-roll shaft.

The guideways are directed to bring the feed-rolls, in either operative or released position, clear of the line of vision from the operator to the printing-point.

A front work-table or guiding chute, formed with edge-guides in vertical relationship to the platen, is mounted on a cross-bar rigidly secured to the brackets. The work-table extends downwardly to a point in close proximity to the platen and the feed-rolls, and co-operates with the rolls in guiding and aligning the work-piece immediately after the latter has passed the feed-rolls.

The edge-guides of the guide-chute, by thus positively aligning the work-piece, make it possible to eliminate the usual lower feed-rolls entirely, thus simplifying the paper-feeding structure.

With the feed-rolls in the released position, a work-piece is inserted from the rear, and, because of the elimination of the lower feed-rolls, may glide freely around the platen. The work-piece as it emerges above the wing-scales is in no way interfered with by the feed-rolls. The leading edge is extended to a point above the feed-rolls. The work-piece is aligned horizontally with the aid of the wing-scales, and the feed-rolls are moved into operative position by a downward pressure on the finger-lever, the rolls smoothing the work-piece against the platen, and bringing the edges within the confines of the edge-guides.

The work-piece is then line-spaced in the usual manner to present the proper writing-line, and the machine is ready for operation.

Other features and advantages will hereinafter appear.

In the accompanying drawing,

Figure 1 is a perspective of the invention as applied to an Underwood typewriting machine.

Figure 2 is an elevation, partly in section, illustrating the machine in operative condition.

Figure 3 is a perspective of the feed-roll shaft end-block.

Figure 4 is an elevation, partly in section, illustrating the method of inserting a work-piece, the feed-rolls having been projected forwardly into released position.

Figure 5 illustrates the rock-shaft-adjusting means.

Referring to the drawing, 15 is a platen, journaled in end-plates 16 of a platen-carriage 17, slidably mounted in the machine-frame (not shown) by means including a pair of co-operating rails 18, 20 (Figure 2) and anti-friction elements 21. The machine-frame carries ribbon-spools, as 22, and type-bars 23, swingable, in the usual manner, against the platen 15, as indicated by the arrow in Figure 2. A rear paper-table 24, connecting the end-plates 16, has a forwardly-curving extension 25, which is spaced around the platen 15 in such manner as to provide a throat 26, wide at the point of entrance, and converging into fairly close relationship with the platen just below a pair of wing-scales 27.

The platen 15 may be line-fed in the usual manner by a knob 28, or when returning the carriage to a new writing-line, by semi-automatic means including a lever and slide 30, 31.

The foregoing elements are all of familiar construction in the Underwood machine.

A pair of brackets **32**, Figure 1, are rigidly connected by an upwardly and readwardly tilted angular cross-bar **33**, and arranged for mounting on the upper surface of the left and right hand carriage end-plates **16**, as by screws **34**. A work-supporting table or guide-chute **36**, having a rear shelf **37** and side-gages **38**, is secured to the said cross-bar by means such as the co-operating screw-and-slot mountings **40**, **41**, which provide for adjustment of the table **36** longitudinally of the platen **15**. The table **36** is preferably made of fixed width as shown, in which event it is selected to conform to the size of the work-piece being used. It may, however, be easily made adjustable to be adaptable to work-sheets of assorted sizes, by forming the rear shelf **37** of relatively adjustable sections similar to those shown in Patent No. 1,503,069, to J. A. B. Smith. The slots **41** are preferably countersunk, as shown in Figure 4, to present a smooth surface which offers no obstruction to the passage of a work-sheet **42**.

As shown in Figure 1, the work-supporting table is preferably L-shaped to permit the operator easily to reach over the edge of the shelf **37** when inserting a new work-sheet. The leading edge of the shelf **37** is brought down into close proximity with the platen **15**.

The brackets **32** have extensions **43**, projecting downwardly and forwardly, and in perpendicular relationship to the platen **15**. Each extension has a slot forming a guideway **44** which, as shown in Figures 2 and 4, slopes upwardly with respect to the platen. The guideways **44** are in parallel and planar relationship to each other.

A feed-roll shaft **45**, slidably mounting a pair of feed-rolls **46** in operative relation to the work-table **36**, and a cross-bracing rod **47** are secured in a pair of end-blocks **48**. The rod **47** is mounted forwardly of and above the shaft **45** to present a minimum of obstruction to the vision of the operator, and is held in a bowed or sprung condition by means of a block **50**, through which the said bracing-rod and feed-roll shaft pass. The resulting structure is a truss of appreciable strength and rigidity, and suitable for even the widest-carriage machines.

The end-blocks **48** each have a projection or runner **51**, Figure 3, having parallel smoothly finished top and bottom edges, the said runner being approximately equal in width to the thickness of the extension **43**, and arranged to slide smoothly in the guideways **44**. The outer face **52** of each end-block **48** acts as a bearing-surface, and the feed-roll structure may thus slidably approach, or withdraw from, the platen **15**, in constantly parallel relationship thereto.

The arrangement of the guideways **44** is such that the feed-roll structure, in either operative or released position, as shown in Figures 2 and 4, is out of the line of vision of the operator (represented by the line A—A) with respect to the printing-point.

A rock-shaft **53**, journaled in the brackets **32**, is fitted at its left-hand end (as viewed in Figure 1) with an arm **54**, rigidly secured to the rock-shaft by means such as a set-screw **55**. At the right-hand end, the said rock-shaft is mounted with an actuating lever **56** secured thereto by a hub-block **57** and offset opposing set-screws **58**. As shown in Figure 1, the arm **54** and lever **56** are mounted outside of the brackets **32**, and the rock-shaft **53** is thereby secured against lateral displacement.

The lever **56** has an arm **60** similar in shape to, and in coordinated adjustment with, the arm **54**, a camming hub-portion **61** and a forwardly-extending finger-piece **62**. As shown in Figure 2, the arm **60** is substantially at right angles to the finger-piece **62**, and a vertical motion of the latter will result in an arcuate, forward or rearward motion of the arms **54** and **60**.

The arms **54** and **60** are brought down within the end-plates **16**, and are pivotally connected to the end-blocks **48** by links **63**, said links preferably being inwardly offset at their forward ends to form flat surfaces **64** which co-operate with the faces **52** of the end-blocks **48** to embrace the extensions **43**. These offset ends additionally serve to bring the pivot-points **65** of the end-blocks directly in front of the arms **54** and **60**, and thus the operating thrust of the said arms is applied substantially at right angles to the feed-roll shaft **45**.

The action of the spring-detent device employed to hold the feed-roll shaft **45** yieldably in operative or released position, is illustrated in Figures 2 and 4. The camming hub-portion **61** of the actuating lever **56** has a ramp **66** of increasing radius with respect to the rock-shaft **53**, said ramp ending abruptly with a drop **67**. A cam-follower **68**, pivoted to the right-hand bracket **32** as by a headed rivet **70**, has a roller **71** which bears against the cam-surface. The cam-follower is urged in a clockwise direction, Figures 2 and 4, by a tensile spring **72**, secured at one end to the follower **68** through an ear **73**, and to the bracket **32** by a pin **74**.

With the feed-rolls **46** in the released position, as shown in Figure 4, the roller **71** rests on the ramp **66**. The operator inserts the work-piece **42** from the rear, sliding it through the throat **26**, the extension **25** of the paper-table **24** deflecting the piece upwardly around the platen **15**, until it projects above the wing-scales **27** as shown. After coordinating a previous writing-line on the work-piece with the said wing-scales, the operator presses down on the finger-piece **62**, thus drawing the feed-roll structure rearwardly. Immediately after the feed-rolls press the work-piece against the platen, the cam-roller **71** passes the peak of the ramp **66** and snaps into the drop portion **67** of the cam, thus holding the work-piece **42** against the platen by the evenly tensioned pressure on the feed-rolls **46**, the follower **68** constantly urging the rock-shaft **53** into counter-clockwise rotation.

The upward slope of the guideways **44** directs the feed-rolls to smooth the work-piece upwardly against the platen, and the said work-piece is drawn rearwardly back within the confines of the side-gages **38**. An edge-guide **39**, Figure 4, laterally slidable along the rear paper-table **24**, may be adjusted to co-operate with one of the side-gages **38** of the work-table **36**, to guide the insertion of the work-piece with respect to the work-table.

The release of the feed-rolls **46** is accomplished with equal facility, as the resistance of the tensile spring is opposed over only a fraction of the required throw of the lever **62**. Immediately after the roller rides over the drop portion **67** of the cam, the slope of the ramp **66** lessens the tension on the spring. When the feed-rolls are in full released position, the spring **72** is substantially in repose. The total throw of the lever required

is only about one inch, as seen from a comparison of Figures 2 and 4.

The feed-roll pressure may be equalized by the rock-shaft adjustment at the actuating lever **56**. As seen in Figure 5, the set-screws **58** are offset, and co-operate with angular notches **75** cut into the shaft **53**. By the manipulation of the set-screws, when the feed-rolls are in operative position, the shaft **53** may be rotated relatively to the lever **56**. The resulting movement of the arm **54** will therefore cause the left-hand feed-roll **46** to bear against the platen **15** with greater or lessened pressure, according to the adjustment.

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, the combination with a platen, a platen-frame, and rolls running upon said platen above the printing-point, of a rock-shaft journaled in brackets secured to said frame, a structure supporting said rolls and slidably mounted in forward extensions of said brackets, instrumentalities for moving said structure in parallel relation to said platen, detent-means for yieldably holding said structure in its operative and released positions, and a work-supporting table mounted between said brackets above said platen, said work-table having edge-guides to co-operate with said rolls in guiding a work-piece around the platen.

2. In a typewriting machine, the combination with a platen, a platen-frame, and rolls running upon said platen above the printing-point, of a rock-shaft journaled in brackets secured to said frame, a structure supporting said rolls and slidably mounted in forward extensions of said brackets, instrumentalities for moving said structure in parallel relation to said platen, detent-means for yieldably holding said structure in its operative and released positions, a work supporting and guiding table mounted between said brackets above said platen, and means operative upon said rock-shaft to equalize the pressure of the rolls upon the platen.

3. A work-sheet feeding and guiding device for a typewriting machine, comprising the combination with a platen and a platen-frame, of a pair of brackets mounted on the platen-frame, guideways projecting forwardly from said brackets, a feed-roll-carrying assembly slidably mounted in said guideways, means for causing said assembly to approach or withdraw from the platen in parallel relationship therewith, detent-means for holding said feed-roll assembly in operative or released position, and an edge-guiding device mounted between said brackets to co-operate with said feed-rolls in guiding said work-sheet around the platen.

4. A work-sheet feeding and guiding device for a typewriting machine, comprising the combination with a platen and a platen-frame, of a pair of brackets mounted on the platen-frame, extensions having slotted guideways projecting forwardly from said brackets, said guideways sloping upwardly toward the platen, end-blocks each having a runner slidably mounted in said guideways, a feed-roll-shaft assembly mounted in said end-blocks, means for simultaneously moving said end-blocks with respect to the platen, and an edge-guiding device mounted between said brackets to co-operate with the feed-rolls in guiding said work-sheet around the platen.

5. A work-piece feeding and guiding device for a typewriter having a platen and a platen-carriage, said device comprising a frame mountable upon said carriage, feed-rolls mounted on a shaft, said frame having guideways extending forwardly of the platen for slidably supporting and guiding said shaft, means in said frame operable for moving said shaft in said guideways for placing said feed-rolls in or out of contact with the platen, and a work-piece-supporting table mounted in said frame above said feed-rolls, said table provided with edge-guides to co-operate with said feed-rolls in guiding the work-piece during operation.

6. In a typewriting machine, the combination with a platen, of feed-rolls to run on the front of the platen, a feed-roll-supporting shaft, guideways extending forwardly from the platen, and supporting and guiding said shaft for feed-roll releasing and restoring movements from and to said platen, a front work-supporting table mounted above said feed-rolls and said platen and arranged to co-operate therewith in guiding a work-piece around said platen, and a rock-shaft connected to said feed-roll shaft to cause the latter in its movements to stay substantially parallel with said platen.

7. In a typewriting machine, the combination with a platen, of a feed-roll assembly slidably mounted in parallel guideways, said assembly comprising end-blocks co-operating with said guideways, a shaft secured to said end-blocks, rollers adjustably mounted on said shaft, a re-enforcing bar secured to said end-blocks, and a member intermediate said end-blocks interposed between said roll-shaft and said re-enforcing bar.

8. In a typewriting machine, the combination with a platen, of a feed-roll assembly slidably mounted in parallel guideways, said assembly comprising end-blocks co-operating with said guideways, a shaft secured to said end-blocks, rollers adjustably mounted on said shaft, a re-enforcing bar secured to said end-blocks, and a member intermediate said end-blocks interposed between said roll-shaft and said re-enforcing bar, holding the latter in sprung condition with respect to said roll-shaft.

9. In a typewriting machine, the combination with a platen and a carriage therefor, of a work-piece feeding and guiding device, comprising brackets mounted on the platen-carriage and having guideways projecting forwardly of said platen, a structure carrying feed-rolls slidably mounted in said guideways, a rock-shaft journaled in said brackets and having arms pivotally linked to said feed-roll structure at each end thereof, a finger-piece on said rock-shaft, a spring-pressed detent acting on said shaft for normally pressing said feed-rolls against the platen, and an edge-guiding paper-table mounted between said brackets to co-operate with said feed-rolls in guiding the work-piece around the platen.

10. In a typewriting machine, the combination with a platen, a platen-frame and rolls running upon said platen, of means for projecting said rolls forwardly from their normal position on the platen above the printing-point to a released position in front of the platen, including brackets mounted on said platen-frame, said brackets having slots forming guideways projecting forwardly of the platen, an end-block in each guideway, having a face in contact with the inner wall of the bracket and a runner slidable within the slot thereof, a shaft mounting said rolls supported between said end-blocks, a rock-shaft journaled in said brackets, links pivotally con-

necting said end-blocks to companion arms depending from said rock-shaft, a finger-piece for rotating said rock-shaft, and detent-means operable on said shaft to hold said rolls in operative or released position.

11. In a typewriting machine, the combination with a platen, a platen-frame, a feed-roll shaft having rolls running upon said platen, and means for projecting said rolls forwardly away from said platen, said means including a rock-shaft, arms affixed thereto, and links pivotally connecting said arms and said feed-roll shaft at the ends thereof, of means arranged to rotate said rock-shaft with respect to one of said arms to equalize the pressure of the feed-rolls on the platen when in engagement therewith.

12. In a typewriting machine, the combination with a platen, a platen-frame and a feed-roll shaft having feed-rolls in engagement with said platen above the printing-point, of means for projecting said feed-roll shaft in front of the platen, said means including brackets on said platen-frame having slots forming guideways projecting forwardly from said platen, end-blocks supporting said feed-roll shaft at the ends thereof slidably confined within said guideways, a rock-shaft journaled above said platen-frame, means for rotating said rock-shaft, connections between said rock-shaft and said end-blocks, and detent-means for holding said feed-rolls in operative or inoperative position.

13. In a typewriting machine, the combination with a platen and a paper-guiding chute erected at the delivery side of the platen, of rolls to run on the front of the platen below said chute, means supporting and guiding said rolls in front of the platen for release and return movements from and to the platen, a rock-shaft, substantially apart from said means, extending along the platen in rear of said chute, and means extending forwardly from the rock-shaft and connected to said rolls to enable said shaft to release and return said rolls from and to the platen.

14. In a typewriting machine, the combination with a platen and a paper-guiding chute erected at the delivery side of the platen, of rolls to run on the front of the platen below said chute, a rock-shaft extending along the platen in rear of said chute, means extending forwardly from the rock-shaft and connected to said rolls to enable said shaft to release and return said rolls from and to the platen, and supporting and guiding means for the rolls including arms mounted at the front of the platen and having slots forming guidways to guide the rolls.

15. In a typewriting machine, the combination with a platen and a paper-guiding chute erected at the delivery side of the platen, of rolls to run on the front of the platen below said chute, a rock-shaft extending along the platen in rear of said chute, means extending forwardly from the rock-shaft and connected to said rolls to enable said shaft to release and return said rolls from and to the platen, and supporting and guiding means for the rolls including arms mounted at the front of the platen and having slots forming guideways to guide the rolls, said rolls carried by a rod having heads guided in said guideways.

16. In a typewriting machine, the combination with a platen and a paper-guiding chute erected at the delivery side of the platen, of rolls to run on the front of the platen below said chute, means supporting and guiding said rolls in front of the platen for release and return movements from and to the platen, a rock-shaft, substantially apart from said means, extending along the platen in rear of said chute, arms extending down from the ends of said rock-shaft, links extending forwardly from said arms to said rolls, and a finger-piece to operate said rock-shaft, to release and return said rolls.

17. In a front-strike typewriting machine, the combination with a revoluble platen, of a feed-roll mounted to run on the platen above the printing line and be movable from and back to the platen, a key manually operable and connected to said feed-roll for moving the latter from and back to the platen, a cam connected to said key to move therewith, and a spring-pressed detent normally engaging said cam to press the feed-roll against the platen, said cam being arranged to override said detent at an initial part of the movement of the feed-roll away from the platen, so that said spring-detent is rendered ineffective to burden the remainder of the feed-roll movement from the platen, said initial part and remainder of movement being consonant with a substantially extensive movement of said feed-roll away from said platen.

18. In a front-strike typewriting machine, the combination with a revoluble platen, of a feed-roll mounted to run on the platen above the printing line and be movable from and back to the platen, a key manually operable and connected to said feed-roll for moving the latter from and back to the platen, a cam connected to said key to move therewith, and a spring-pressed detent normally engaging said cam to press the feed-roll against the platen, said cam being arranged to override said detent at an initial part of the movement of the feed-roll away from the platen, so that said spring-detent is rendered ineffective to burden the remainder of the feed-roll movement from the platen, said initial part and remainder of movement being consonant with a substantially extensive movement of said feed-roll away from said platen, said cam being formed on a part having an extension cooperative with said spring-pressed detent to render the latter operative to assist in effecting said remainder of the feed-roll movement from the platen.

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