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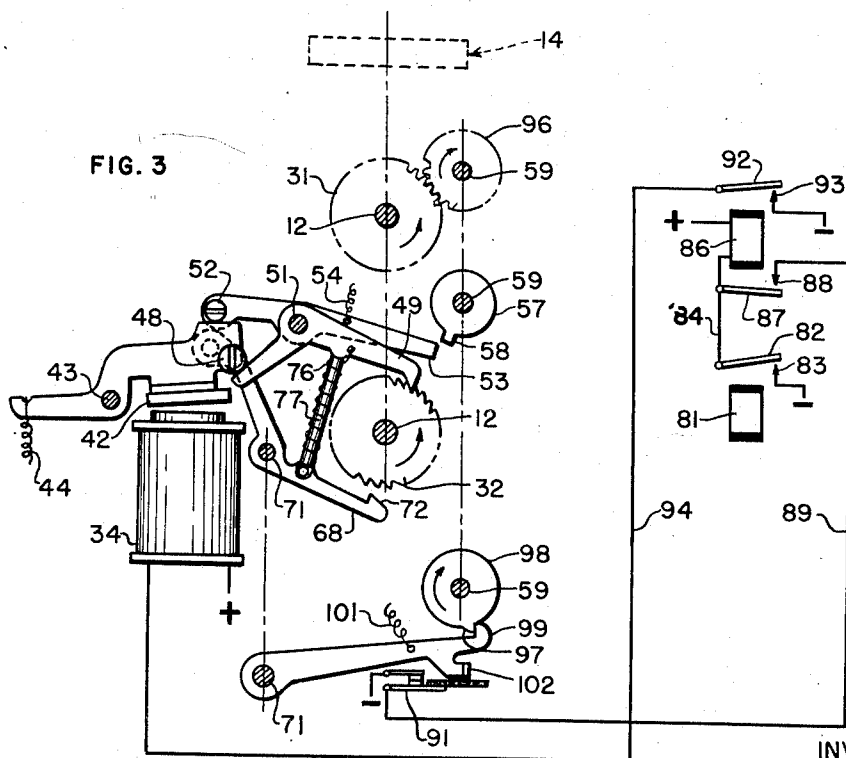
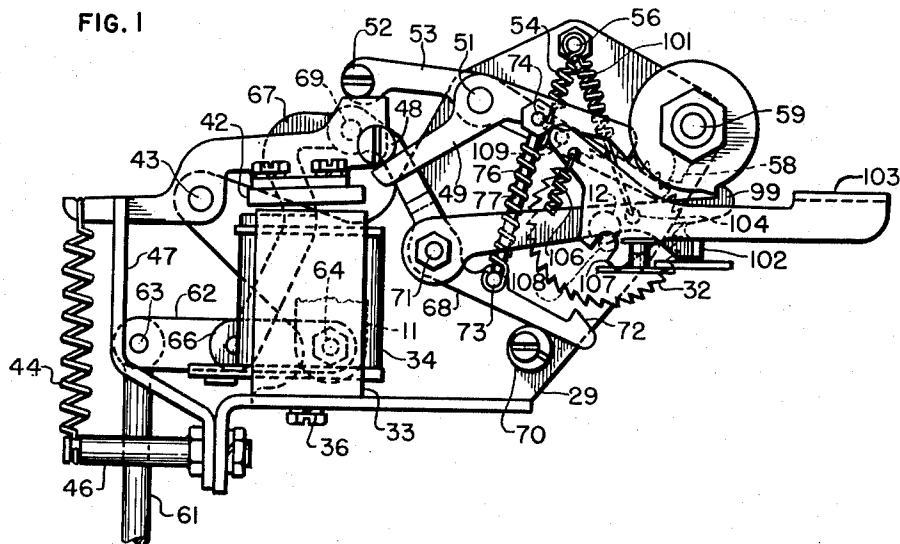
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2,536,528

FEED OUT MECHANISM FOR TELEGRAPH PRINTERS

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2 Sheets-Sheet 1



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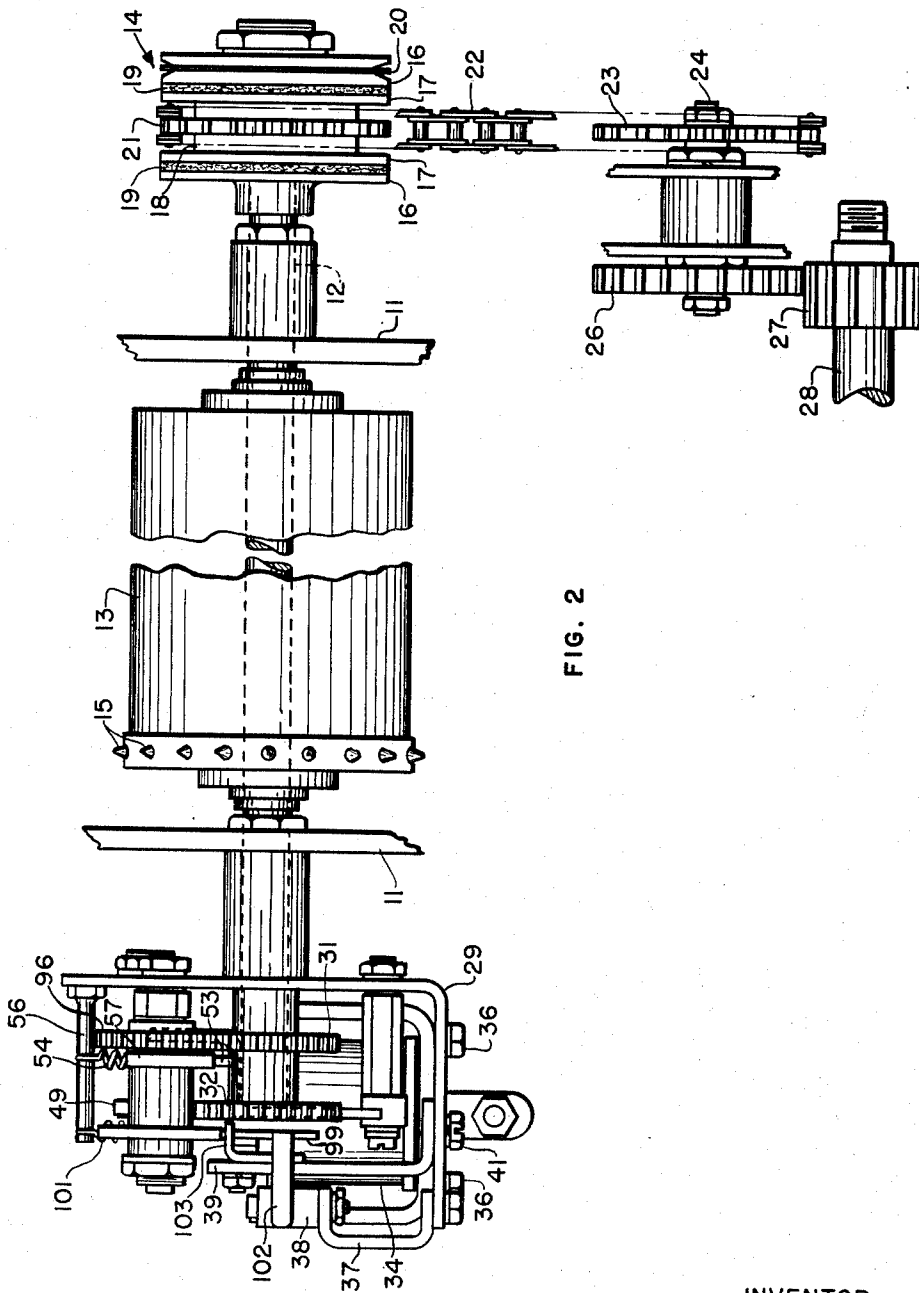


FIG. 2

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FEED OUT MECHANISM FOR TELEGRAPH PRINTERS

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7 Claims. (Cl. 178-42)

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This invention relates to printing telegraph apparatus and more particularly to paper feed mechanisms therefor. The preferred embodiment of the invention, as shown in the drawings and described in detail herein, is particularly suitable for use with telegraph printers of the type shown in U. S. Patent No. 1,904,164, to Morton et al.; however, the invention is not limited for use with this particular printer and is readily adapted for use with other telegraph printers.

In the type of telegraph printers mentioned above it is customary to supply paper therefor from a continuous roll. The paper on the roll may be either in the form of a continuous uninterrupted strip or it may be separated by rows of perforations at uniform intervals to form ticket blanks. When the continuous uninterrupted strip is utilized, it is common practice to employ a cutter which is designed to cut the strip into tickets of uniform length, thereby avoiding the inconvenience of tearing the tickets apart, manually or otherwise, as is necessary when the paper strip is separated by perforations. In forming tickets from a strip of paper passing through a telegraph printer it is desirable upon completion of printing of information on a ticket, that means be provided for rapidly advancing a uniform length of the paper out of the printer in order to avoid the loss of signal time and generally speed up operations. Attempts have been made in the past to accomplish this rapid feed out of telegraph paper but not without attendant drawbacks. Successive line feed signals have been used but obviously it is a slow operation to feed any appreciable length of paper in this manner. Other mechanisms have been designed wherein an auxiliary feed mechanism is provided for feeding out the paper more rapidly than by the use of successive line feed signals; however, such mechanisms are quite complicated and expensive.

It is, therefore, an object of the present invention to provide a paper feed out mechanism which is rapid in operation and of simple design.

Another object of the invention is to provide a paper feed out mechanism which is operable in response to telegraph signals, or to signals external to the telegraph signals, or is operable manually.

By the present invention the platen is continuously urged in a direction to feed the paper by means of a chain or belt driven friction clutch, the drive member of which is rotated continuously by the main printer shaft. An escapement mechanism controls the rotation of the platen, the normal line feed mechanism being adapted to control the escapement mechanism in a manner so as to enable step by step rotation of the platen. Mechanism is provided which is re-

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sponsive to a special telegraph signal or to impulses coming from any external source for causing the escapement mechanism to permit rapid rotation of the platen to a predetermined point to thereby rapidly feed out forms of uniform length from the printer.

Other objects and advantages of the invention will be apparent and the invention will be more readily understood from the following detailed description when read in conjunction with the accompanying drawings wherein:

Fig. 1 is a side elevational view showing the principal features of the invention;

Fig. 2 is a front elevational view including the platen and drive mechanism therefor; and

Fig. 3 is a schematic view of the invention.

Referring now to the drawings only a portion 11 of the printer frame is shown. Mounted suitably for rotation in the frame is a platen shaft 12 which carries a platen 13. The platen 13 is provided with a plurality of projections 15 spaced evenly about the platen and at one end thereof. These projections 15 are adapted to enter perforations in a strip of paper (not shown) which is advanced through the printer around the platen 13 in order to prevent slippage of the paper. It is contemplated, however, that the platen 13 may be used without the projections 15 or with projections on both ends of the platen 13. A friction clutch, indicated generally by reference numeral 14, is mounted on the shaft 12 and has a pair of driven members 16 which are secured to the shaft 12. A pair of drive members 17 are secured to a drive sleeve 18 which is rotatable about the shaft 12. A pair of friction washers 19 are mounted between the drive and driven members 17 and 16 to enable slipping therebetween when the shaft 12 is restrained and to enable the drive members 17 to drive the driven members 16 when the shaft 12 is not restrained. A leaf spring 20 supplies sufficient pressure between the driving and driven members to enable rotation of the driven members when the shaft 12 is not restrained. Also carried by the drive sleeve 18 is a gear 21 over which rides a driving chain 22. The chain 22 also rides over a gear 23 mounted suitably for rotation with a shaft 24. A gear 26 is also mounted on the shaft 24 and meshes with a gear 27 secured to a main drive shaft 28 of the printer. Since the main shaft 28 is rotated continuously, motion is transferred continuously to the drive members 17. It is contemplated that a belt may be substituted for the drive chain 22.

A bracket 29 secured suitably to the frame 11 by means not shown supports the feed out mechanism. The platen shaft 12 extends through the bracket 29 and carries a gear 31 and ratchet 32. A bracket 33 for supporting an operating magnet 34 is secured to the bracket 29 by means of screws

36. Another bracket 37 is secured suitably to the bracket 29 and supports a contact pile 38. A bracket 39 is bolted suitably to the bracket 29 by means of a bolt 41 and also serves to help support the feed out mechanism.

The magnet 34 has a cooperating armature 42 mounted pivotally on a shaft 43 and biased continuously in a counterclockwise direction by a spring 44 secured at its other end to a stud 46 bolted suitably to the bracket 29. A member 47 secured suitably to the bracket 29 has a notch (not shown) in its upper portion for guiding the armature 42 during its pivotal movement. The armature 42 has an eccentric screw 48 which cooperates with a pawl 49 secured pivotally on a shaft 51 and the armature 42 also cooperates with an eccentric screw 52 on a stop lever 53. Thus as the armature 42 is attracted by the magnet 34 against the action of the spring 44 the pawl 49, which normally cooperates with the ratchet 32, is withdrawn therefrom, while at the same time the stop lever 53 is free to pivot counterclockwise under the influence of a spring 54 secured suitably to a stud 56. A stop cam 57 having a lug 58 and mounted on a shaft 59 is adapted to cooperate with the stop lever 53 during its above described movement in response to energization of the magnet 34.

The normal step by step line feed is accomplished by the mechanism to be immediately described. A line feed link 61 corresponds to the line feed link 246, in the above mentioned patent to Morton et al., and in response to a line feed signal, moves upwards slightly and then returns to the position thereof as shown. The line feed link 61 is secured pivotally to a bail 62 by means of a bolt 63. The bail 62 has a shaft portion 64 which is pivotal within the frame 11, and a short portion 66 which is secured pivotally to a lever 67. The lever 67 is secured pivotally to a lower pawl 68 by means of a pivot bolt 69, the lower pawl 68 also cooperating with the ratchet 32.

During a normal line feed operation as the line feed link 61 raises, the lower pawl 68 is pivoted counterclockwise about a shaft 71 away from an eccentric stop 70 so that a tooth 72 on the pawl 68 is moved towards the ratchet 32. The pawl 68 has a stud 73 and the pawl 49 has a stud 74 and the pawls are urged continuously towards one another by a spring 76 connecting the studs 73 and 74. Both of the pawls 49 and 68 are prevented from engaging the ratchet 32 simultaneously by a rod 77 which is positioned within the convolutions of the spring 76 and which abuts both lugs 73 and 74. When the pawl 68 is pivoted counterclockwise due to the raising of the line feed link 61, the pawl 49 is pivoted counterclockwise due to the action of the rod 77. Pivoting of the pawl 49 in this manner removes it from engagement with the ratchet 32, and by the time that the pawl 49 and ratchet 32 are disengaged, the pawl tooth 72 is in a position to engage the ratchet. However, when the pawl 49 engages one tooth on the ratchet 32 the tooth 72 is opposite the midpoint between two consecutive teeth on the ratchet so that upon the disengagement by the pawl 49 and simultaneous engagement of the pawl 68 with the ratchet 32, the ratchet is permitted to move counterclockwise a distance equal to one half the distance between two teeth. As the line feed link 61 lowers to its normal position the tooth 72 is withdrawn from the ratchet 32, and at this time the spring 76 draws the pawl 49 towards the ratchet 32. When the pawls move in this manner the ratchet 32 is again stepped a

distance equal to one half the distance between two consecutive teeth thereon.

A magnet 81 is energized in response to either a special telegraph signal, in any well known manner, or to any other signal or impulse. Upon energization of the magnet 81, its armature 82 is pulled up to thereby complete a circuit from negative battery through a closed contact 83 and armature 82, over a lead 84, through a relay 86, to positive battery. The relay 86 locks up over a circuit extending from positive battery, through the relay 86, over the lead 84, through a now closed armature 87 and contact 88, over a lead 89, through a closed contact pair 91 of the contact pile 38, to negative battery. The relay 86, upon being energized, also pulls up an armature 92, thereby completing a circuit from negative battery, through a closed contact 93 and armature 92, over a lead 94, through the magnet 34, to positive battery.

When the magnet 34 is energized over the aforesaid circuit in response to either a special telegraph signal or signal from some external source, the armature 42 is pulled down. The pawl 49 is thereby disengaged from the ratchet 32 and the stop lever 53 moves towards the stop cam 57. Disengagement of the pawl 49 from the ratchet 32 enables the clutch 14 to rotate the platen shaft 12 in a counterclockwise direction (Figs. 1 and 3), since the pawl 68 is retained in disengaged relation with the ratchet 32 due to the action of the normal line feed mechanism which is unoperated at this time. As the platen shaft 12 is rotated in this manner, the gear 31 meshes with a gear 96 and thereby causes the shaft 59, on which the gear 96 is mounted, to rotate in a clockwise direction. After the platen shaft 12 has rotated a distance sufficient to feed out a ticket or strip of paper of the proper length, as determined by the ratio between the gears 31 and 96, the lug 58 on the stop cam 57 engages the stop lever 53 to prevent further rotation of either the shaft 59 or the platen shaft 12. Immediately prior to the lug 58 reaching the stop lever 53 a high portion 97 on a cam 98 engages its follower lever 99 which is spring biased in a counterclockwise direction (Fig. 3) by a spring 101, and upon the lug 58 reaching the stop lever 53, the follower 99 overrides the high portion 97 of the cam 98. When the follower lever 99 is pivoted clockwise, against the action of its spring 101, by the high portion 97, an arm 102 on the follower 99 engages and opens the contact pair 91, thereby causing the breaking of the circuit to the magnet 34. When the contact pair 91 is opened the relay 86 is de-energized, under which circumstance the armature 92 falls back to break the circuit to magnet 34. De-energization of the magnet 34 enables the pawl 49 to move towards the ratchet 32 and the stop lever 53 is withdrawn from blocking engagement with the stop lug 58.

When the armature 42 is released the pawl 49 is midway between two teeth on the ratchet 32 and is moved to a position so as to engage the next tooth on the ratchet 32 when the stop lever 53 moves from engagement with the lug 58. Therefore, upon the completion of a feed out operation the platen 13 is stopped first by the lug 58 engaging the stop lever 53 and momentarily thereafter is moved one half a step after the stop lever 53 and lug 58 become disengaged.

A manually operable lever 103 is provided for manually disengaging the upper pawl 49 from engagement with the ratchet 32 when so desired.

The manual lever 103 is mounted pivotally on a shaft 104 and is continuously urged in a counter-clockwise direction about the shaft 104 by a spring 106. The manual lever 103 has two projecting arms 107 between which a stud 108 projects, the stud 108 serving to limit the pivotal movement of the manual lever 103. There is also a stud 109 carried by the manual lever 103 which engages and lifts the upper pawl 43 from engagement with the ratchet 32 whenever the manual lever 103 is depressed, thus enabling an operator to manually control paper feed out due to rotation of the platen 13.

It is contemplated that changes may be made in the details of construction set forth in the description without departing from the scope of the invention.

What is claimed is:

1. In a telegraph printer, a rotatable platen, means continuously tending to advance said platen, a ratchet associated with said platen and rotatable therewith, an escapement mechanism cooperating with said ratchet to control the advancement of said platen by said advancing means, means operable in response to a special signal for causing said escapement mechanism to cause said advancing means to advance said platen a step, and means operable in response to a different special signal for causing said escapement means to cause said advancing means to advance said platen to a predetermined point in the rotation thereof.

2. In a telegraph ticket printer for printing tickets of uniform length, a rotatable platen, means continuously tending to advance said platen, a ratchet associated with said platen and rotatable therewith, an escapement mechanism comprising a pair of cooperating pawls cooperating with said ratchet to control the advancement of said platen by said advancing means, means operable in response to a special signal for causing said pawls to enable said advancing means to advance said platen a step, and means operable in response to a different signal for actuating one of said pawls to enable said advancing means to advance said platen to a predetermined point in the rotation thereof.

3. In a form feed out mechanism for telegraph printers, the combination of a platen, drive means for continuously urging said platen forward rotatably to feed out a form, an escapement mechanism for controlling the movement of said platen by said drive means, a line feed mechanism cooperating with said escapement mechanism to enable stepped movement of said platen by said drive means in response to line feed signals, and an auxiliary feed mechanism cooperating with said escapement mechanism to enable continuous rotation of said platen to a predetermined position in response to another special signal, to thereby feed out said form.

4. In a form feed out mechanism for telegraph printers, the combination of a platen, drive means for continuously urging said platen forward rotatably to feed out a form, an escapement mechanism for controlling the movement of said platen by said drive means, a line feed mechanism cooperating with said escapement mechanism to enable stepped movement of said platen by said drive means in response to line feed signals, an auxiliary feed mechanism cooperating

with said escapement mechanism to enable continuous rotation of said platen to a predetermined position to thereby feed out said form, and a magnet operable in response to an electrical impulse for rendering said auxiliary feed mechanism effective.

5. In a form feed out mechanism for telegraph printers, the combination of a platen, drive means for continuously urging said platen forward rotatably to feed out a form, an escapement mechanism for controlling the movement of said platen by said drive means, a line feed mechanism cooperating with said escapement mechanism to enable stepped movement of said platen by said drive means in response to line feed signals, an auxiliary feed mechanism cooperating with said escapement mechanism in response to an electrical impulse to enable continuous rotation of said platen to a predetermined position to thereby feed out said form, and manually operable means cooperating with said escapement mechanism to enable continuous rotation of said platen to feed out an indefinite number of forms.

6. In a form feed out mechanism for telegraph printers, the combination of a platen, drive means for continuously urging said platen forward rotatably, an escapement mechanism for normally restraining the movement of said platen by said drive means, a stop means, means operable in response to an electrical impulse for rendering said escapement mechanism ineffective to thereby render said drive means effective to advance said platen, means rotatable with said platen and operable with said stop means upon rotation of said platen to a predetermined position for restraining further rotation of said platen, and further means rotatable with said platen effective upon said platen reaching said predetermined position for rendering said stop means and said first mentioned means rotatable with said platen ineffective to further restrain rotation of said platen and for rendering said escapement mechanism effective to restrain rotation of said platen by said drive means.

7. In an apparatus for printing telegraph tickets of uniform length, a platen for engaging a strip of paper from which the tickets are formed, means normally urging said platen forward to feed out said strip of paper, escapement means for controlling movement of said platen by said platen urging means, line feed means cooperating with said escapement means in response to a special line feed signal for enabling said platen urging means to advance said platen a step, and means cooperating with said escapement means in response to an electrical impulse for enabling said platen urging means to continuously advance said platen an indefinite amount, whereby tickets of uniform length are invariably formed.

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The following references are of record in the file of this patent:

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Number	Name	Date
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