

May 30, 1939.

H. H. HAGLUND ET AL

2,160,139

MESSAGE EJECTING MECHANISM FOR TELEGRAPH PRINTERS

Filed July 14, 1937

4 Sheets-Sheet 1

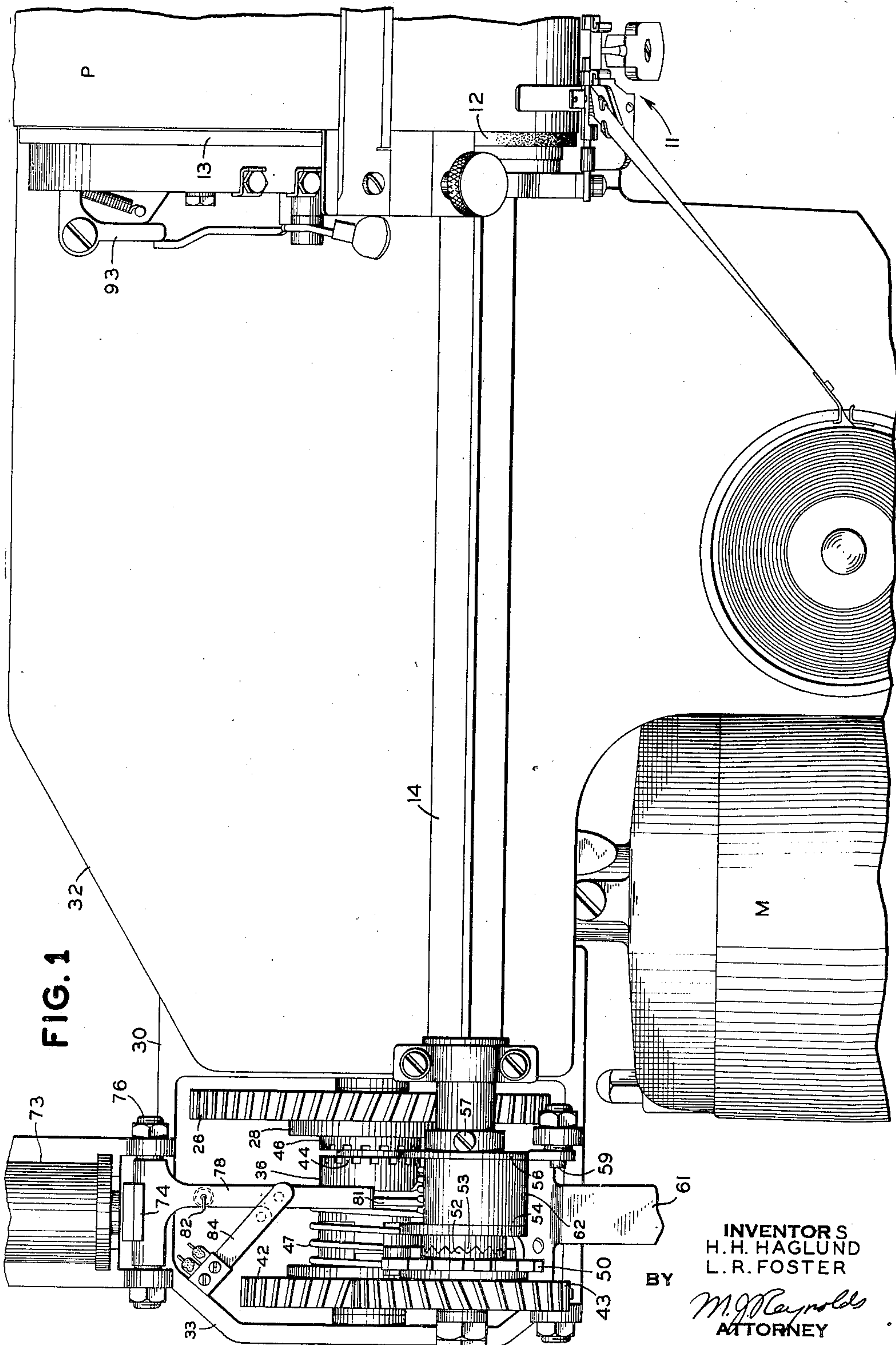


FIG. 1

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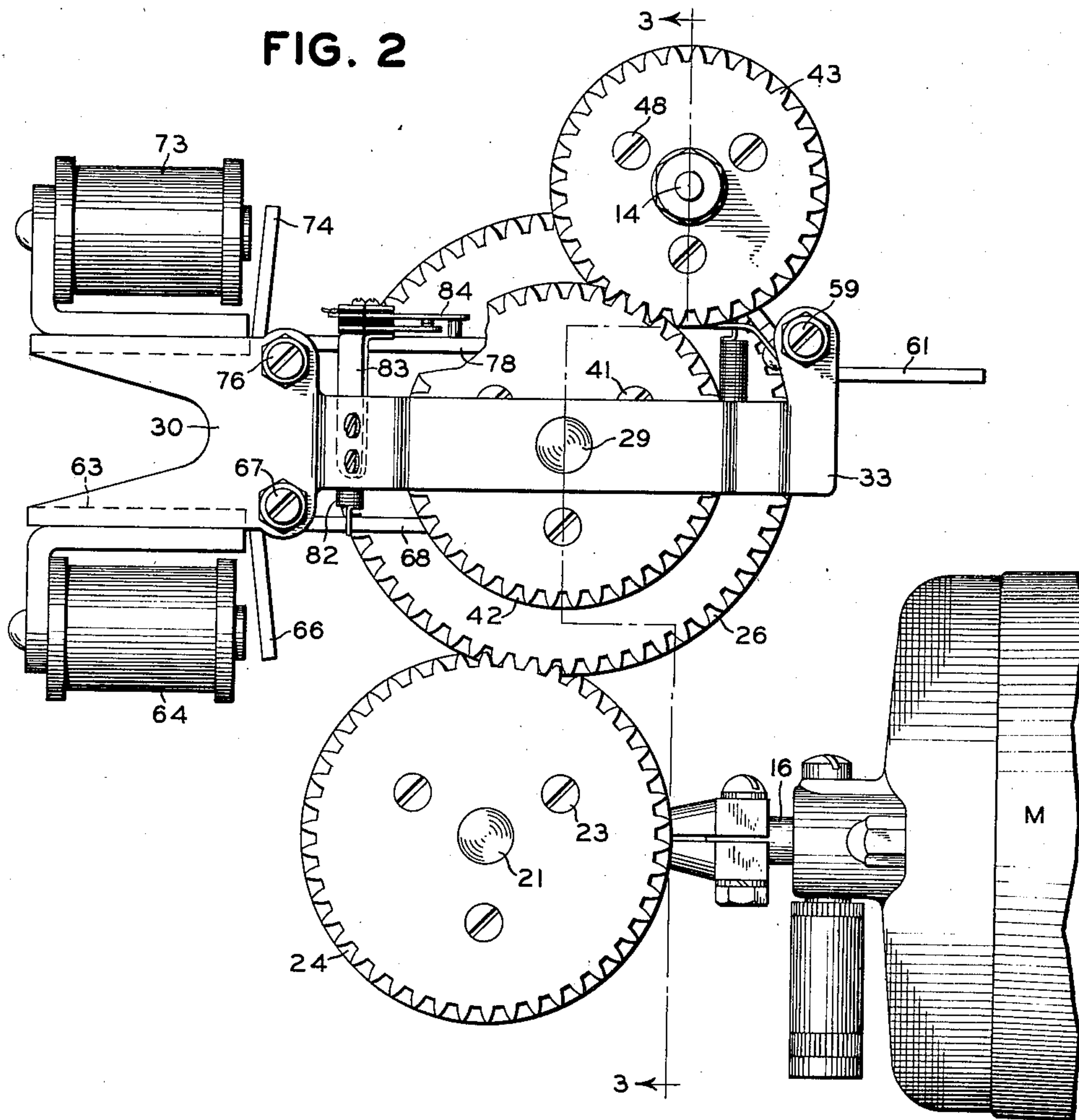
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MESSAGE EJECTING MECHANISM FOR TELEGRAPH PRINTERS

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4 Sheets-Sheet 2

FIG. 2



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MESSAGE EJECTING MECHANISM FOR TELEGRAPH PRINTERS

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4 Sheets-Sheet 3

FIG. 3

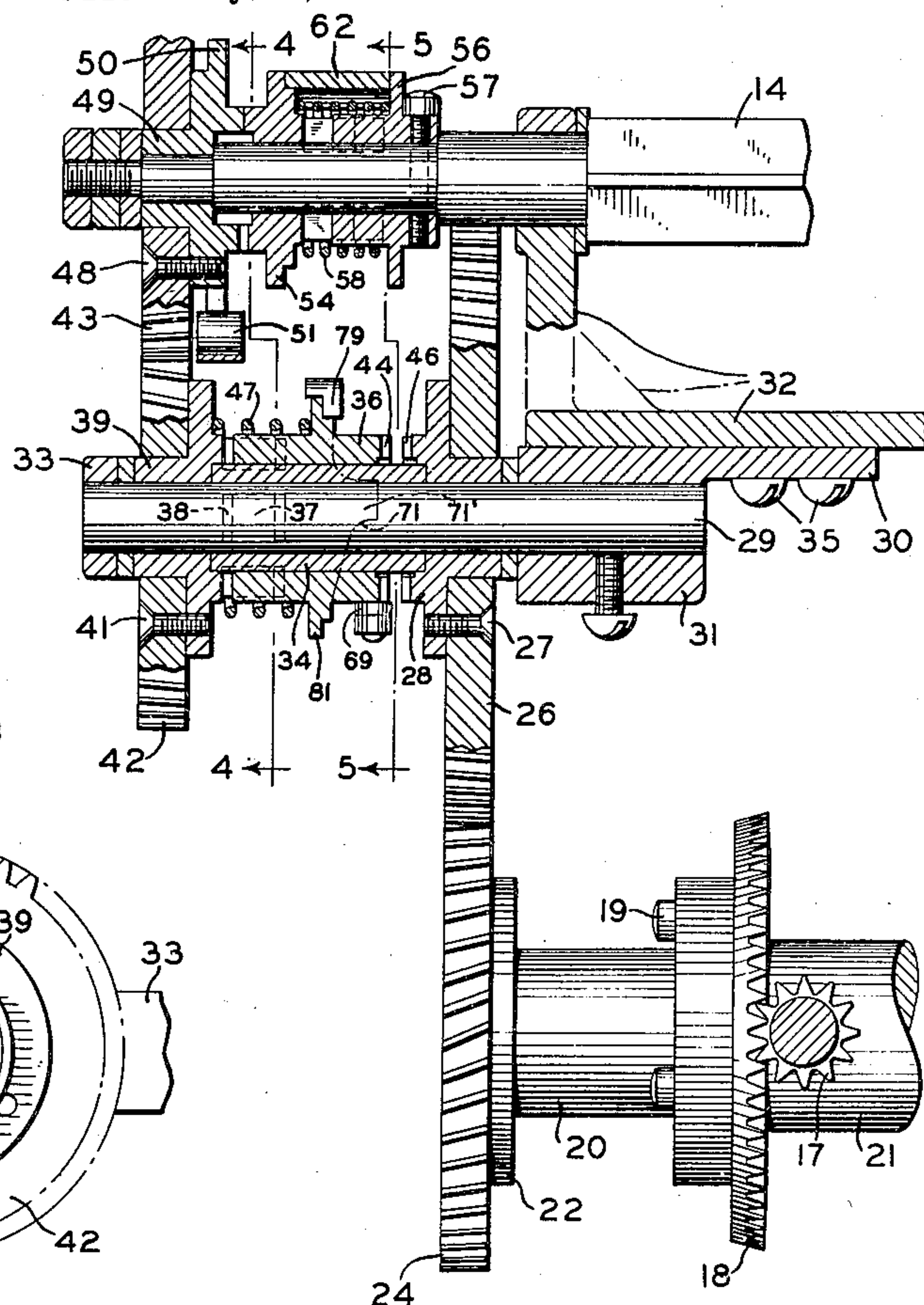


FIG. 4

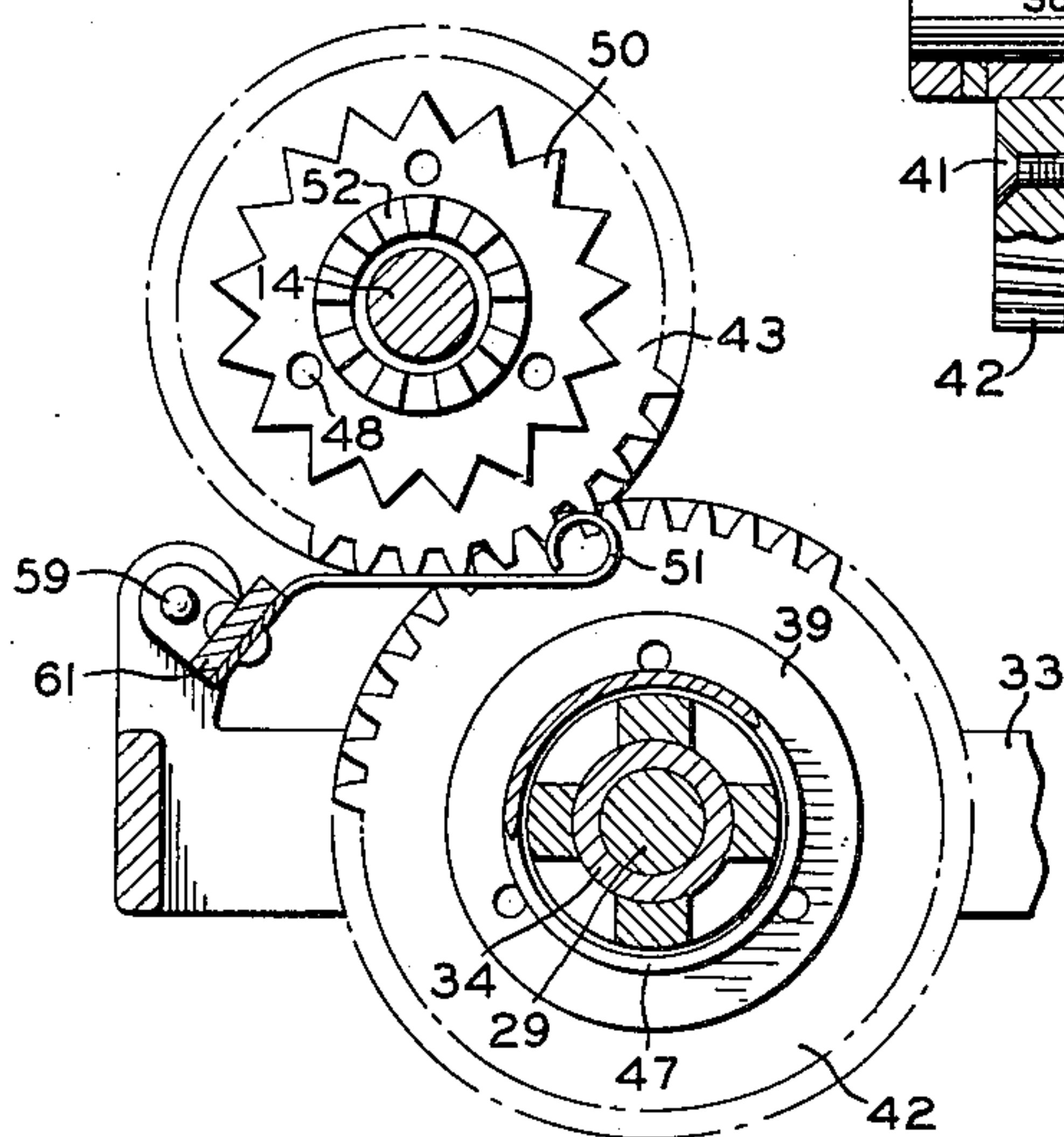
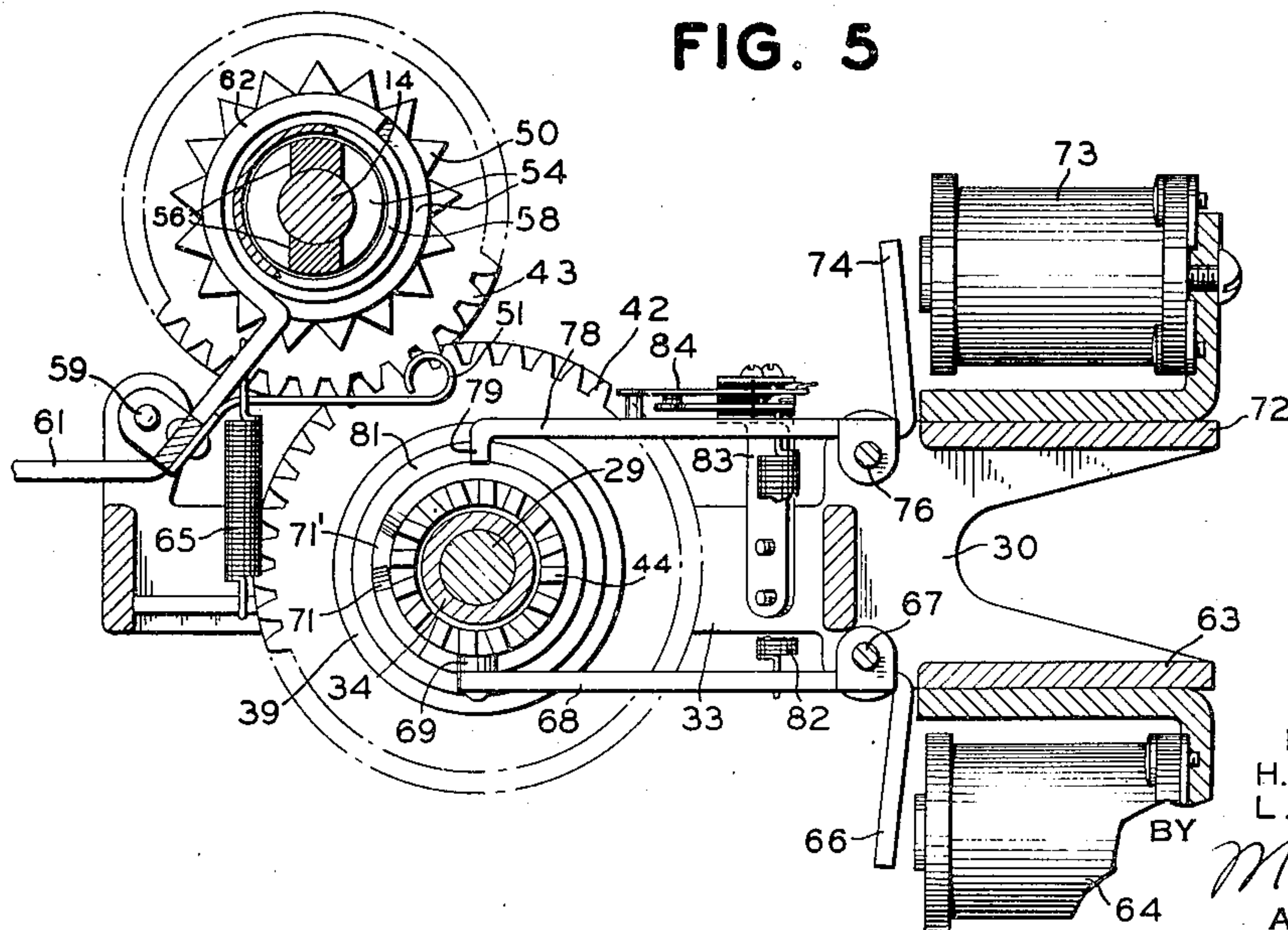


FIG. 5



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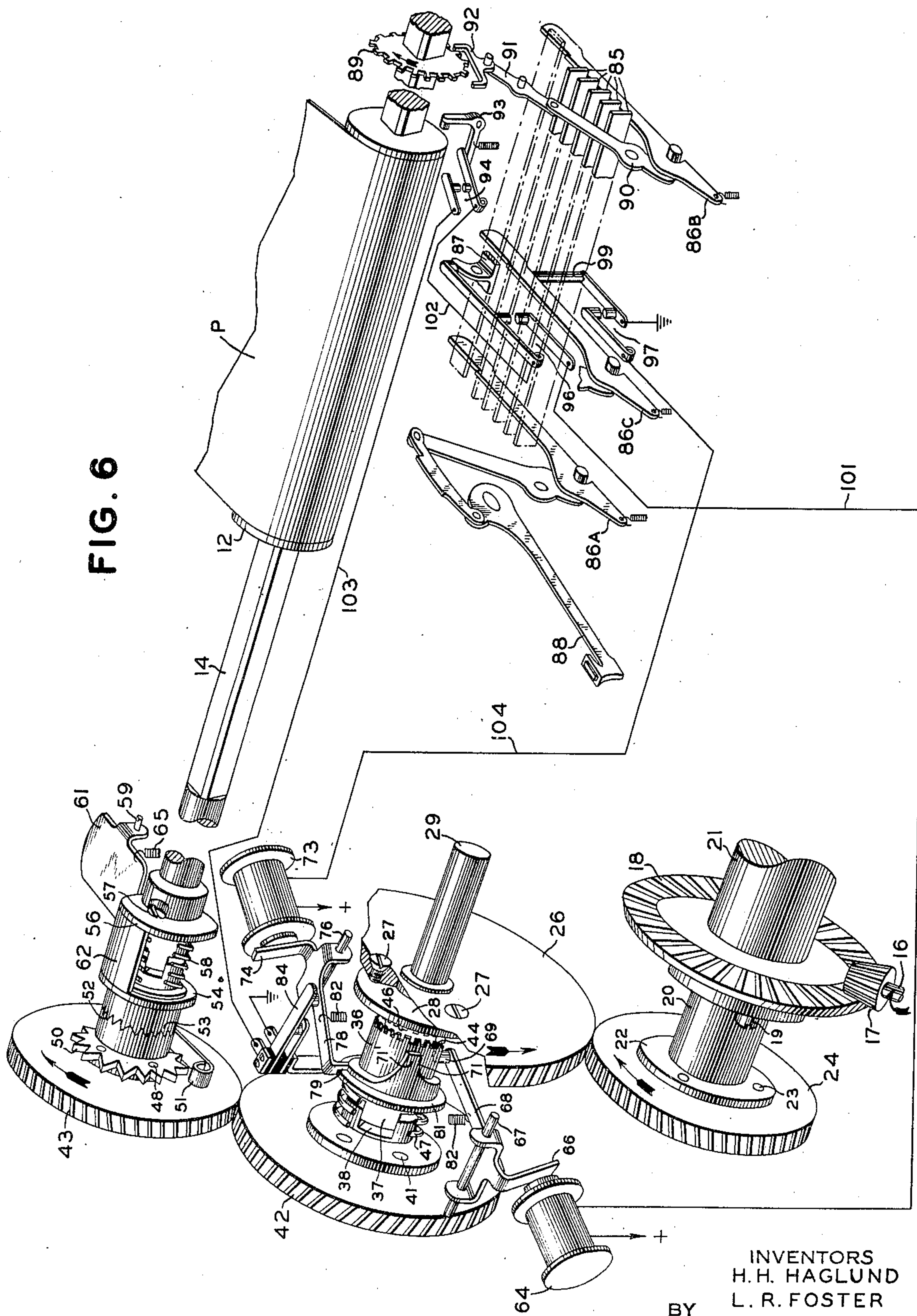
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MESSAGE EJECTING MECHANISM FOR TELEGRAPH PRINTERS

Filed July 14, 1937

4 Sheets-Sheet 4



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2,160,139

MESSAGE EJECTING MECHANISM FOR
TELEGRAPH PRINTERS

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Application July 14, 1937, Serial No. 153,530

15 Claims. (Cl. 178—42)

This invention relates primarily to telegraph printers and more particularly to auxiliary paper feed mechanisms for such printers. The preferred embodiment of this invention is particularly adapted for use in conjunction with or as an attachment or improvement for telegraph printers of the type disclosed in U. S. Patent No. 1,665,594, issued April 10, 1928, to H. L. Krum. However, it should be kept in mind that the invention is not limited for use with this particular printer but may be readily adapted to operate with many other telegraph printers.

In telegraph printers of the type mentioned above the recording paper is usually supplied to the printer from a continuous roll. The roll has printed thereon headings which correspond to telegraph blanks and are separated by distances equal to the average length of a telegraph blank. Heretofore at the beginning of a message, a plurality of line feed signals had to be transmitted to move the heading past the printing position and present the clear part of the paper in the proper recording position. Again at the end of a message several more line feed signals had to be transmitted to advance the paper out of the printer which at the same time advanced another blank into the printing position. After the messages are received and the paper advanced sufficiently through the printer, the paper is then cut or torn at the proper places so that the pieces resemble and are of approximately the same size as an ordinary telegraph blank. Where the messages are very short and comprise only a few words or lines, such as in transmitting cablegrams, a considerable amount of line time is wasted or lost in advancing the headings and the blank sections of the telegraph blanks through the printer. If the paper is manually advanced through the recording printer between messages, the sending operator has to wait while this operation is being manually performed and this method also wastes line time.

It is, therefore, one of the primary objects of this invention to provide an apparatus for use in conjunction with telegraph printers whereby the operator at the transmitting station at the completion of a message may cause the paper in the receiving printer to be automatically advanced the proper length to form sheets of substantially uniform length for each message in response to a single signal transmitted at the end of a message. While the paper is thus advanced in response to a single signal to eject the last received message from the receiver, the heading for the following message is pulled past

the printing position and the paper made ready for the recording of a following message. Since the messages are of variable length, the amount that the paper must be advanced at the end of each message in response to the single signal, so that the blanks are of substantially equal length, varies inversely with the length of the messages. Since it is practically impossible to prevent slippage between the printing platen and the paper where the paper is advanced unequal amounts in substantially equal time intervals, the slippage occurs in unequal amounts. As the headings on the roll of paper are substantially equally spaced, the individual slippages accumulate and after the reception of a few messages the printing of a message on the paper is likely to occur out of proper relation with the heading, such as having the first lines or all of the message printed in the heading and/or at some other undesired place other than immediately following the heading.

It is, therefore, another object of this invention to provide a mechanism whereby a correction may be automatically applied to the paper when it becomes necessary to restore the heading thereof to the proper position relative to the starting point of a message and the printing mechanism of the printer.

Another object of the invention is to provide means whereby the above mentioned correction may be applied during the reception of one message to have effect on the positioning of the blank for the following message.

These and other objects of the invention will be apparent from the following description when taken in conjunction with the appended claims. A better understanding of the invention may be had from the following detailed description, taken in conjunction with the mode of operation of the above mentioned telegraph printer and the drawings, in the later of which:

Fig. 1 is a plan view of one embodiment of the invention and a partial view of a telegraph printer of the general type mentioned above, showing the manner in which this embodiment of the invention is attached to the printer, to cooperate therewith;

Fig. 2 is a left hand elevational view of the preferred embodiment of the invention;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view taken on the line 4—4 of Fig. 3;

Fig. 5 is a fragmentary sectional view taken on the line 5—5 of Fig. 3; and

Fig. 6 is a schematic view of the embodiment of the invention and the elements of the printer cooperating therewith and controlled thereby, together with the electrical circuits therefor.

Referring first to Fig. 1, the structural arrangement of elements of the invention and the cooperating elements of the telegraph printer mentioned above will first be given and then followed by the conjoined operation of the two. The printer embodies a platen carriage indicated in general by reference numeral 11, a portion only of which is shown in Fig. 1, and which comprises a platen roller 12 and paper guides 13. The paper P is held in frictional engagement with the platen roller 12 by means of pressure rollers (not shown) and as the platen is rotated, in response to line feed signals and other means as hereinafter described, the paper is advanced through the printer. The complete platen carriage being suitably guided is adapted to slide back and forth on the squared shaft 14, advancing step by step from right to left to effect letter spacing in conjunction with received code combinations of impulses and at the end of a printed line or for the beginning of another line the carriage is returned to its extreme right hand position in response to a carriage return signal. Concomitantly with the carriage return, the platen roller 12 is rotated one step to bring a fresh line or surface of the paper P into printing position.

As is fully described in the above mentioned patent, the power for performing the various printer functions of the telegraph printer is supplied from a continuously rotating electric motor M. The motor shaft 16, Figs. 2 and 3, has secured to one end thereof, for rotation therewith, a pinion 17 which meshes with and drives a gear 18, secured to the operating shaft 21 of the printer for rotation therewith. Secured to the left hand end of the operating shaft 21 by screws 19 is an extension 20 which has attached thereto by screws 23 for rotation therewith, a helical gear 24. The gear 24 meshes with another helical gear 26 located thereabove, which in turn is attached by screws 27 to a flanged gear hub 28. The hub 28 is loosely mounted on a non-rotating counter-shaft 29 which is supported at its right hand end in a section 31 of a bracket casting 30 attached to the printer frame 32. The left hand end of the counter-shaft 29 is supported in a horizontal portion 33 of the bracket casting 30. The bracket casting 30 is suitably attached to the frame 32 of the printer by screws such as 35. Loosely mounted adjacent the center of the counter-shaft 29 is a spacing sleeve 34 which in turn has loosely mounted thereon a flange collar 36. The collar 36 is operatively engaged at its left hand end with a gear hub 39 by means of interengaging tongues and grooves 37 and 38 formed on and in the collar 36 and hub 39 respectively. Fixed to the hub 39 by screws 41 is a helical gear 42 meshing with another helical gear 43 located thereabove.

The collar 36 is adapted to slide back and forth on the sleeve 34, as hereinafter described, to bring teeth 44, disposed on the right hand face thereof, into and out of engagement with similar teeth 46 disposed on the left hand face of the continuously rotating gear hub 28. A spring 47, coiled about the collar 36, normally tends to slide the collar to the right, as shown in Fig. 3, to bring its teeth into engagement with the teeth 46 of the hub 28. However, the collar is normally held to the left by means hereinafter described.

The above mentioned gear 43 is attached by screws, such as 48, to a flanged gear hub 49. The gear hub 49 is loosely mounted adjacent the left hand end of the platen carriage shaft 14. Formed on a flange integral with the gear hub 49 is a star wheel 50 which cooperates with the detent 51, as will be hereinafter described. Formed on the right hand face of the gear hub 49 are a series of teeth 52, best shown in Fig. 1, which are normally engaged with similar teeth 53 formed on the left hand face of a collar 54, also loosely mounted on the platen carriage shaft 14. The collar 54, Fig. 3, is at all times operably engaged with another collar 56 by means of interengaging tongues and grooves on and in the collars 54 and 56, respectively, and the collar 56 is secured to the platen carriage shaft 14 for rotation therewith by means of screws, such as 57. Thus the collar 54 is slidable along the shaft 14, within certain limits, as hereinafter described, but is at all times rotatable therewith. Coiled about the tongues and grooves of collars 54 and 56 is a coiled spring 58 which tends to slide the collar 54 to the left as shown in Fig. 3 and keep its teeth 53 engaged with the teeth 52 of the gear hub 49.

Pivoted on screws, such as 59, Figs. 1, 2 and 5, in the bracket casting 30, is a thumb lever 61. This thumb lever has a curved section 62 which is normally held between flanges on the collars 54 and 56, by an attached spring 65, and thus prevents the collar 54 from sliding to the right under conditions hereinafter described.

Mounted on a section 63, Fig. 5, of the bracket casting 30 is a magnet 64. The armature 66 of this magnet is pivoted on armature pivot screws such as 67 and has a horizontal section 68, the end of which extends beneath the collar 36. At the left hand end of the armature extension 68 is a cam follower 69 which is adapted to cooperate, as hereinafter pointed out, with a side cam surface 71, integral with the collar 36. Secured to another section 72 of the bracket casting 30 is another magnet 73. An armature 74 adapted to be operated by the magnet 73 is pivoted on armature pivot screws such as 76 and has a horizontally extending section 78 which extends over the collar 36. The left hand end of the extension 78 has a downwardly extending projection 79 which cooperates with a flange 81 of the collar 36. The armatures 66 and 74 are normally held in their retracted positions by a common spring 82 extending between their respective extensions. Mounted on a bracket 83, secured to the section 33 of the bracket casting, is a normally closed contact 84. The springs of the contact 84 extend over the armature extension 78 of magnet 73 and the contact is adapted to be opened when the magnet is energized as hereinafter described.

As fully described in the above mentioned patent, the printer comprises a set of permutation bars, such as 85, Fig. 6, which are set in combinations in accordance with the line signals, and a plurality of operating bars, such as 86a to 86c, associated with the permutation bars 85 and thereby selectively allowed to move into the path of an operating bail 87 which operates once for each received code combination of impulses. The operating bail 87 engages the selected operating bar 86 and causes printer functions and printing operations to be performed. A plurality of the operating bars such as 86a are articulatively associated with typebars such as 88 and cause their associated typebar to operate and print the character thereon when such operating bars are

selected and operated. A ratchet wheel 89 rotatable with the platen carriage shaft 14, is rotated or stepped a predetermined amount by means of a lever 90, a link 91 and a ratchet pawl 92 associated with the operating bar 86b whenever said operating bar is selected and operated. This advances the paper one line to bring another line into printing position, and another printer function, the carriage return, operating in conjunction with the line feed signal or as a separate signal causes the carriage to be returned to its extreme right hand position, ready for the beginning of another line of printing.

A bell crank 93 is pivoted in the printer frame 32 and is adapted to cooperate with the platen carriage and a contact 94 to close the contact when the carriage is in its extreme right hand position. For all other positions of the carriage, the contact 94 is open. The operating bail 87 of the printer which, as is well understood, operates once in response to every received signal, cooperates with a contact 96 to close the contact during the operation of the operating bail. Another contact 97 is adapted to close when a predetermined one of the operating bars such as 86c is selected. The operating bar 86c has attached thereto a piece of insulating material 99 which normally holds the contact 97 open. In this particular embodiment the operating bar 86c is selected in response to a signal corresponding to the upper case J signal, although any other operating lever could be used which normally determines the end of a message. The upper case J signal is used as this is a bell signal and is best adapted to fit in with present office routine.

The circuits between the above mentioned contacts 84, 94, 96 and 97 will now be described. One of the terminals of the magnet 64 is connected to battery and the other terminal thereof is connected by a conductor 101 through the contact 96, conductor 102, contact 94, conductor 103 and thence through the contact 84 to ground. One terminal of the magnet 73 is connected to battery and the other terminal is connected over a conductor 104 through the contact 97 to ground.

The operation of the invention in conjunction with the operation of the printer will now be described. Assume that the platen carriage is in its extreme right hand position and that the paper is in the correct position with respect to the heading for the beginning of a message. With the carriage in its right hand position, the contact 94 will be closed. The contact 84 is normally closed and when the operating bail 87 operates in conjunction with the first signal of the message, the contact 96 will be closed. For the purpose of illustration, the operating bail 87 is used to close the contact 96, although any member which operates once in conjunction with each signal combination prior to the operation of the bail 87 could equally well be employed. Therefore, the circuit to the magnet 64 will be completed, causing it to be energized and withdraw the cam follower 69 on the armature extension 68 from engagement with the side cam surface 71 integral with the collar 36. Thereupon the spring 47 slides the collar 36 to the right a slight amount and brings the right hand side of the flange 81 thereon into engagement with the left hand side of the depending projection 79 on the end of the armature extension 78. This movement of the collar 36 to the right is not sufficient to bring the teeth 44 thereof into engagement with the teeth 46 of the continuously rotating gear hub 28 but

is enough so that when the magnet 64 is subsequently rendered inoperative as the operating bail 87 returns to normal, the cam follower is not allowed to operatively reengage the side cam surface 71. The end of the cam follower 69 thereupon engages the outer surface of the side cam surface 71 and therefore no longer prevents the rotation of the collar 36, by means hereinafter described. As the carriage is advanced one letter space concomitantly with the recording of the first signal of the message of contact 94 is allowed to open after the recording of the first character and therefore for the remaining signals in the first line of the message the magnet 64 will not be energized for each operation of the operating bail 87. At the end of the first line of the message a carriage return signal is transmitted and allows the platen carriage to return to its right hand position and thus closes the contact 94. A line feed signal operating in conjunction with the carriage return signal, as heretofore described, thereupon causes the platen 12 to be rotated one step. Normally the gear 43 is adapted to rotate with the platen shaft 14 and as the side cam surface 71 and the cam follower 69 are not operatively engaged at this time, the rotation of the platen shaft 14 and the gear 43 in response to the line feed signal causes the gear 42 to rotate. The gear 42, being at all times operatively engaged with the collar 36 to rotate therewith, causes the collar to rotate. This operation is repeated every time a line feed signal is received during the remainder of the message. After a few rotative steps of the collar 36 from its normal position, the outer surface of the side cam surface 71 passes out of engagement with the end of the cam follower 69 whereupon the follower rides upon the circumference of the collar 36 and in the path of the side cam surface. Obviously, the magnet 64 is energized by the line feed signal immediately following a carriage return signal and also by the first signal thereafter but it performs no useful function except when the cam follower 69 is operatively engaged with the side cam surface 71, in the normal position of the latter, as hereinbefore described. The gears 43 and 42 are arranged relative to one another and to the circumference of the platen roller 12 so that the collar 36 will make one complete revolution for a movement of the platen corresponding to the length of one complete message blank.

Assume that a complete message has been printed which only partially fills up the space between headings. The operator thereupon transmits an upper case J signal which causes the contact 97 to close and complete the hereinabove described circuit to the magnet 73. The energization of the magnet 73 causes the withdrawal of the projection 79 on the armature extension 78 from engagement with the flange 81 on the collar 36. Thereupon the spring 47 slides the collar to the right to bring the teeth 44 thereon into engagement with the continuously rotating teeth 46 on the gear hub 28. This gears the platen shaft 14 directly to the motor M whereupon it will be rotated thereby. The cam follower 69 will not interfere with the sidewise movement of the collar 36 in bringing its teeth 44 into engagement with the rotating teeth 46 of the gear hub 28 because this movement is not sufficient to move the flange 81 on the collar against the cam follower 69. While the collar 36 and gear hub 28 are rotating together and the magnet 73 is de-energized, the lower surface of projection 79 on the armature extension 78 rides on the circum-

ference of the flange 81 until the collar 36 is disengaged from the gear hub 28 as hereinafter described. Thereupon the armature extension 78 and projection 79 return to their normal position. The collar 36 is thus rotated step by step for part of a revolution, as hereinbefore described, in response to line feed signals from its normal position and then coupled to the gear hub 28 to complete the revolution and at the completion of one revolution thereof, the side cam surface 71 engages the cam follower 69 to cam or slide the collar 36 to the left and bring its teeth 44 out of engagement with the teeth 46 of the rotating gear hub 28. A further projection 71' of the side cam surface 71, substantially at right angles to the direction of rotation thereof, then engages the cam follower 69 to bring the collar 36 to rest in its normal stop position. The rotation of the collar 36 by the gear hub 28 is usually enough to cause the platen 12 to be rotated sufficiently to advance the remainder of the blank of the preceding message and the heading of the following message past the printing position, so as to bring the top of the following blank into correct position relative to the printing mechanism. As the shaft 29 makes one complete revolution in the time of each complete signal received, the collar 36 will complete its revolution in a time interval of less than one signal interval and therefore the transmitting operator, as heretofore, neither has to wait between messages while the receiving operator is manually removing the last message and inserting another blank nor to transmit a number of line feed signals, the time interval between messages only requiring one signal interval, i. e., the upper case J signal, or any other signal indicating the end of a message.

The above described operations would continue indefinitely and bring the blank of a following message into correct printing position at the end of every preceding message if there was no slippage between the platen 12 and the paper P and if the headings were all equally spaced. However, it is impossible to prevent some slippage. This error is accumulative and after a few messages, the first line of print of a message approaches the heading. When the operator at the receiving station observes the first line of a message being printed within less than a predetermined distance of the heading, he operates the thumb lever 61 and holds it operated until after a line feeding operation has taken place, whereupon he releases it. As the thumb lever is operated, the curved portion 62 thereof is withdrawn from between the flanges on the collars 54 and 56 and the detent 51 attached to the thumb lever operatively engages an indentation in the star wheel 50. Now when the line feed operation takes place, the gear train, comprising gears 42 and 43, are restrained from operation by virtue of the detent 51 engaging the star wheel 50. Therefore, as the collar 54 is stepped by the line feed signal, the beveled surfaces of the teeth 52 on the gear hub 49 engaging similar surfaces on the teeth 53 of collar 54 causes the collar to slide to the right against the action of the spring 58. This allows the collar to be thus rotated without rotating the gear hub 49. Obviously, the number of teeth on the collar 54 and gear hub 48 must be equal to or a multiple of the number of line feed operations necessary to rotate the platen shaft 14 one complete revolution. Thus for this particular line feed with the thumb lever held operated, the collar 36 is not rotated.

Therefore, when the collar 36 is finally engaged with the gear hub 28 as hereinbefore described for the remainder of its revolution at the end of a message, the platen 12 will be rotated an amount sufficient to advance the paper for one message plus the amount rotated in one line feed operation. This therefore advances the paper one extra line feed and brings the first line of print of the following message further from the heading by that amount.

Obviously, when it is desired to correct for more than the distance of one line feed, the thumb lever 61 is held operated during the desired number of line feed operations by the printer. Thus the operator is capable of correcting for practically any amount desired and the corrections take place only at the end of a message. The platen shaft 14 may be manually rotated in either direction at any time by holding the thumb lever 61 operated such as when the operator puts a new roll of tape in the receiver or when the first line of a message is too far from the heading. The contact 84 is in the circuit to the magnet 64 to prevent the possibility of the magnet 64 being operated in conjunction with the end of message signal as would be likely to occur when the end of message signal was received with the platen carriage in or near its right hand position. Otherwise both magnets 64 and 73 might be simultaneously energized and allow the collar 36 to rotate for more than the remainder of its current revolution, which would obviously advance an excess of paper.

It is obvious, of course, that various modifications and changes of the apparatus shown and described herein may be made without departing from the spirit or essential attributes of the invention and it is desired therefore that only such limitations shall be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

What is claimed is:

1. In a printing telegraph machine, a selecting mechanism, a printing mechanism, a platen co-acting with said printing mechanism, a record paper engaging said printing platen, a main paper feeding mechanism adapted to advance the paper a predetermined amount for each operation thereof, an auxiliary paper feeding mechanism adapted to advance the paper a plurality of said predetermined distances at the end of a message so that the paper is normally advanced in substantially equal amounts for each message received, means responsive to said selector mechanism for rendering said auxiliary paper feeding means operative and means operative during the advancement of said paper by said main paper feeding mechanism to automatically vary the total advancement of said paper by said main and auxiliary paper feeding mechanisms.

2. In combination with a printing telegraph machine comprising a selecting mechanism, a recording mechanism and a main recording medium advancing means adapted to advance said medium predetermined amounts for each operation thereof, of an auxiliary recording medium advancing means adapted to advance said medium a second predetermined amount on each operation thereof, means for normally decreasing the amount of advancement of said medium by said auxiliary advancing means by amounts equal to the advancement of said medium by said main advancing means and means for canceling the effect of one or more operations of said main ad-

vancing means relative to the amount of advancement of said medium by said auxiliary advancing means.

3. In a telegraph printing machine, a printing platen, a record paper engaging said printing platen and adapted to be advanced in one direction on the rotation thereof, a first platen rotating means adapted to rotate said platen by equal amounts for each operation thereof, a second platen rotating means adapted to rotate said platen by unequal amounts for each operation thereof, means whereby the amount of rotation of said platen by said second platen rotating means is normally determined by the number of operations of said first platen rotating means between successive operations of said second platen rotating means and solely mechanically operable means for canceling the effect of one or more operations of said first platen rotating means in determining the amount of rotation of said platen by said second platen rotating means.

4. In a printing telegraph machine employing a record paper in the form of a continuous web, a selector mechanism, a first paper advancing means adapted to advance the paper in equal amounts for each successive line of a message and a second paper advancing means adapted to advance the paper in variable amounts, means responsive to said selector mechanism for selectively rendering both of said paper advancing means operable, one at a time, means whereby a variable number of operations of said first paper advancing means and a single operation of said second paper advancing means advances said paper in substantially equal amounts and means for automatically increasing the amount of advancement of said paper by both of said paper advancing means.

5. In a printing telegraph machine employing a record paper in the form of a continuous web, a selector mechanism, a first paper advancing means adapted to advance the paper in equal amounts for each successive line of a message and a second paper advancing means adapted to advance the paper in variable amounts, means responsive to said selector mechanism for selectively rendering both of said paper advancing means operable one at a time, means whereby a variable number of operations of said first paper advancing means and a single operation of said second paper advancing means advances said paper in substantially equal amounts, a manually operable means and means whereby the operation of said manually operable means during the advancement of said paper by said first paper advancing means automatically varies the total advancement of said paper by both of said paper advancing means.

6. In a printing telegraph machine employing a record paper in the form of a continuous web, a selector mechanism, a first paper advancing means adapted to advance the paper in equal amounts for each successive line of a message and a second paper advancing means adapted to advance the paper in variable amounts, means responsive to said selector mechanism for selectively rendering both of said paper advancing means operable one at a time, means whereby a variable number of operations of said first paper advancing means and a single operation of said second paper advancing means advances said paper in substantially equal amounts, a manually operable means and means whereby the operation of said manually operable means during the advancement of said paper by said first paper advancing

means automatically increases the total advancement of said paper by both of said paper advancing means by an amount equal to the advancement of said paper by said first paper advancing means during the operation of said manually operable means.

7. In a printing telegraph machine employing a record paper in the form of a continuous web, a selector mechanism, a first paper advancing means adapted to advance the paper in equal amounts for each successive line of a message and a second paper advancing means adapted to advance the paper in variable amounts, means responsive to said selector mechanism for selectively rendering both of said paper advancing means operable one at a time, means whereby a variable number of operations of said first paper advancing means and a single operation of said second paper advancing means advances said paper in substantially equal amounts, a manually operable means and means whereby the operation of said manually operable means automatically increases the total advancement of said paper, by one or more operations of said first paper advancing means and one operation of said second paper advancing means, by an amount equal to a multiple of the advancement of said paper by a single operation of said first paper advancing means.

8. In a printing telegraph machine, a rotatable platen, a first platen rotating means, a second platen rotating means, a rotatable member, normally coupled to said platen and having a normal position and a plurality of off-normal positions, adapted to make one complete revolution for each message group of signals, means employing said first platen rotating means for normally rotating said member step-by-step from said normal position through a plurality of off-normal positions, means employing said second platen rotating means for continuously rotating said member to complete a revolution from the last off-normal position to said normal position and means for uncoupling said rotatable member and said platen during predetermined operations of said first platen rotating means.

9. In a printing telegraph machine, a record paper, a first paper line feeding mechanism for feeding the paper one line space in response to each line space signal, a second paper line feeding mechanism for feeding the paper in the same direction a variable number of line spaces in response to a single predetermined signal, means for controlling the variable number of line spaces supplied to said paper by said second paper feeding means so that the total length of paper fed by both of said paper feeding means is substantially the same for each normal cycle of operation thereof and means for automatically increasing the total length of paper fed by both of said paper feeding means for each conjoined cycle of operation thereof.

10. In a printing telegraph machine, a record paper, a first paper line feeding mechanism for feeding the paper one line space in response to each line space signal, a second paper line feeding mechanism for feeding the paper in the same direction a variable number of line spaces in response to a single predetermined signal, means for controlling the variable number of line spaces supplied to said paper by said second paper feeding means so that the total length of paper fed by both of said paper feeding means is substantially the same for each normal cycle of operation thereof and means for preventing more than one

operation of said second paper line feeding mechanism at a time.

11. In a page printing telegraph machine, a selecting mechanism, an operating mechanism controlled by said selecting mechanism and operable once in response to each received signal group of impulses, a record paper, a printing platen engaging said paper and rotatable about the axis thereof to effect line spacing of said paper and movable along the axis thereof to effect letter spacing of said paper, a first paper line feeding means operable by said operating mechanism to feed said paper a predetermined amount on each operation thereof, a second paper line feeding means for feeding said paper variable amounts on each operation thereof so that the total length of paper fed by both of said paper feeding means is substantially the same for a plurality of successive operations of said first paper line feeding means and a single operation of said second paper line feeding means and means for allowing a subsequent operation of said second paper line feeding means only when preceded by an operation of said operating mechanism with said platen in a predetermined axial position.

12. In a page printing telegraph machine, a selecting mechanism, an operating mechanism controlled by said selecting mechanism and operable once in response to each received signal group of impulses, a record paper, a printing platen engaging said paper and rotatable about the axis thereof to effect line spacing of said paper and movable along the axis thereof to effect letter spacing of said paper, a first paper line feeding means operable by said operating mechanism to feed said paper a predetermined amount on each operation thereof, a second paper line feeding means for feeding said paper variable amounts on each operation thereof so that the total length of paper fed by both of said paper feeding means is substantially the same for a plurality of successive operations of said first paper line feeding means and a single operation of said second paper line feeding means and means controlled by an operation of said operating mechanism with said platen in a predetermined axial position for partially conditioning said second paper line feed means for operation.

13. In a page printing telegraph machine, a selecting mechanism, an operating mechanism controlled by said selecting mechanism and operable once in response to each received signal group of impulses, a record paper, a printing platen engaging said paper and rotatable about the axis thereof to effect line spacing of said paper and movable along the axis thereof to effect letter spacing of said paper, a first paper line

feeding means operable by said operating mechanism to feed said paper a predetermined amount on each operation thereof, a second paper line feeding means for feeding said paper variable amounts on each operation thereof so that the total length of paper fed by both of said paper feeding means is substantially the same for a plurality of successive operations of said first paper line feeding means and a single operation of said second paper line feeding means and means for allowing a subsequent operation of said second paper line feeding means only after said platen has passed through a predetermined axial position.

14. In a printing telegraph machine, a printing platen, a record paper engaging said printing platen and adapted to be advanced on the rotation thereof, a source of power, a first coupling means for coupling said source of power to said platen to rotate the same by predetermined increments on each operation thereof, a second coupling means for coupling said source of power to said platen to rotate the same in the same direction by variable amounts so that the total rotation of said platen is normally a predetermined amount after each operation of said second coupling means, a manually operable means and means whereby the operation of said manually operable means during the operation of said first coupling means increases the total amount of rotation of said platen over said predetermined amount by an increment equal to the amount of rotation of said platen by said first coupling means during the operation of said manually operable means.

15. In a printing telegraph machine, a printing platen, said platen being movable along the axis thereof to effect letter spacing and rotatable about the axis thereof to effect line spacing, a record paper engaging said printing platen and adapted to be advanced on the rotation thereof, a source of power, a first coupling means for coupling said source of power to said platen to rotate the same by predetermined increments on each operation thereof, a second coupling means for coupling said source of power to said platen to rotate the same in the same direction by variable amounts so that the total rotation of said platen is normally a predetermined amount after each operation of said second coupling means, means dependent upon the axial position of said platen for partially conditioning said second coupling means for operation and means for preventing the operation of said last mentioned means during the operation of said second coupling means.

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