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MULTITAPE TELEGRAPH RECEIVER

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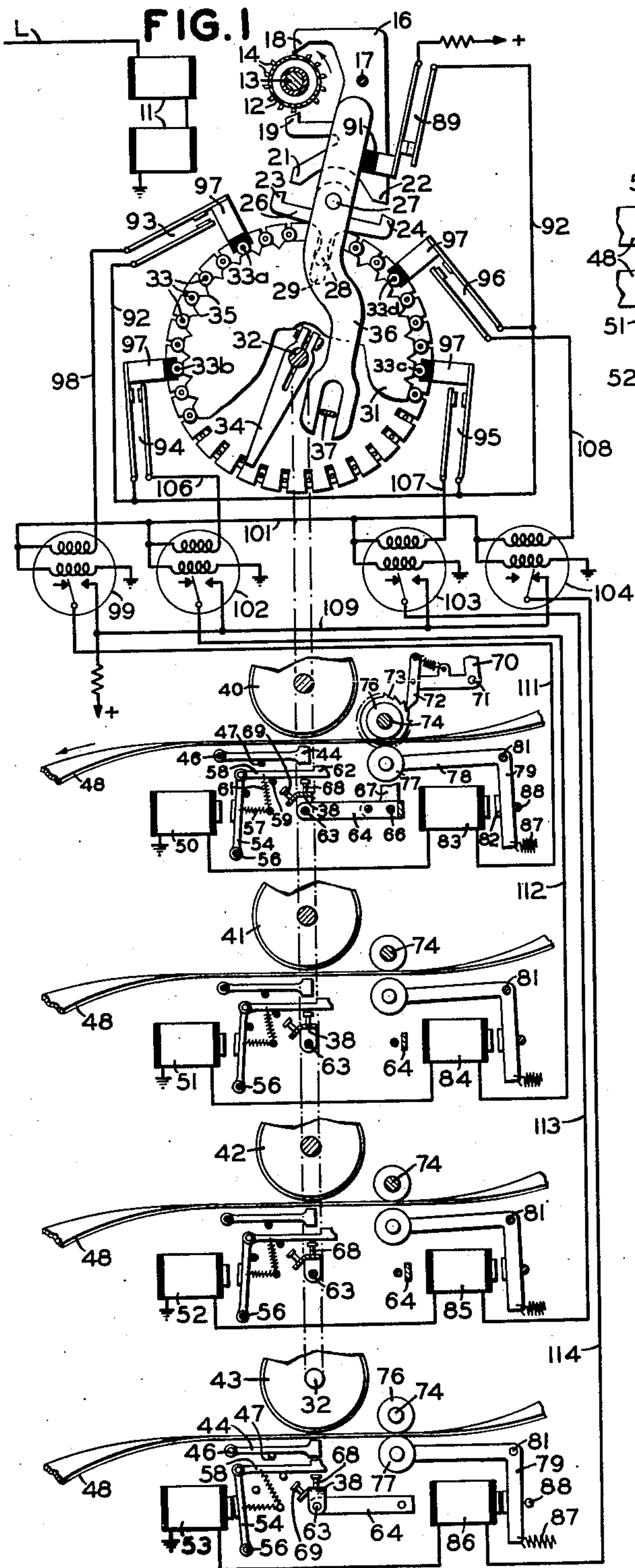


FIG. 2

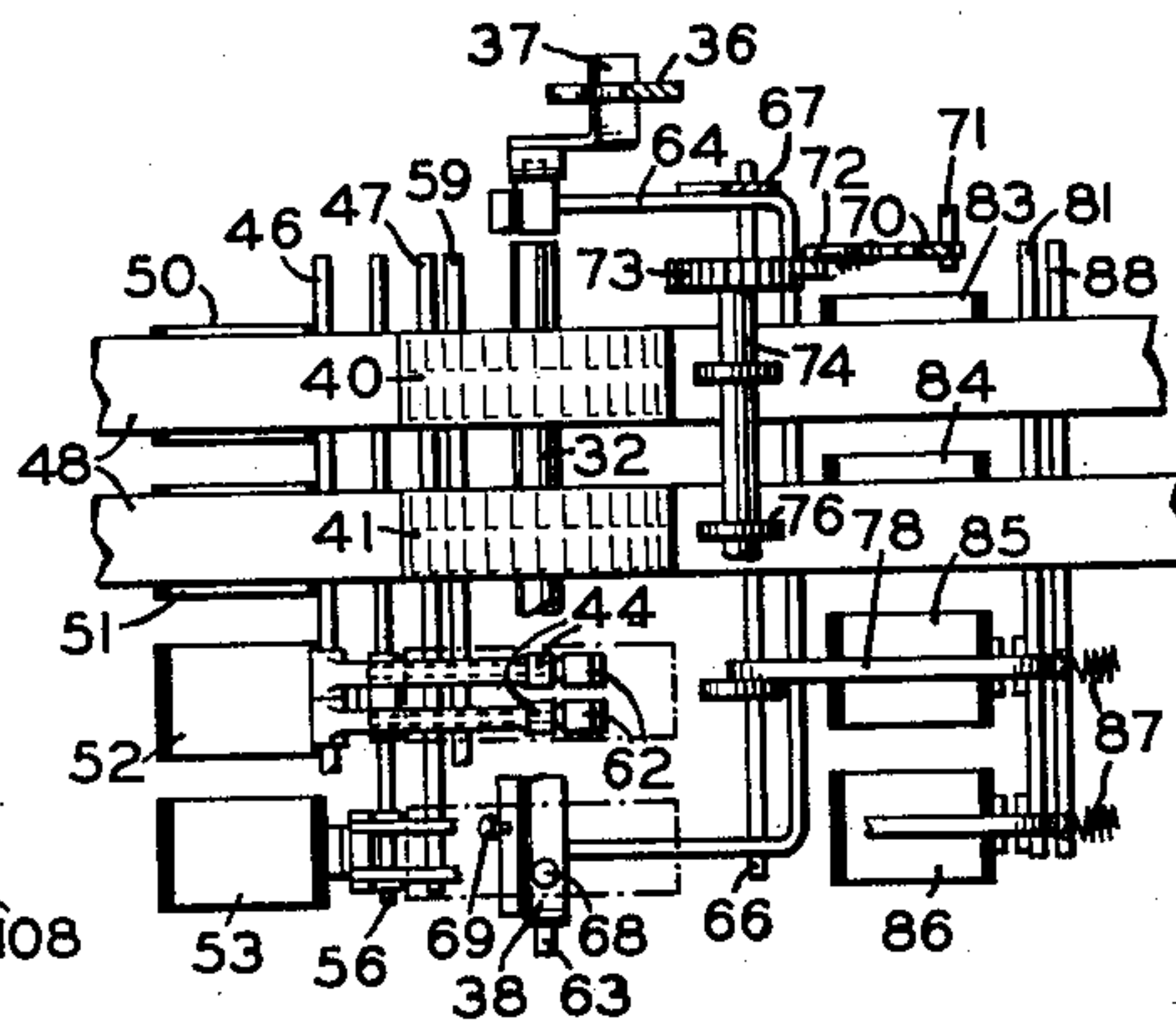
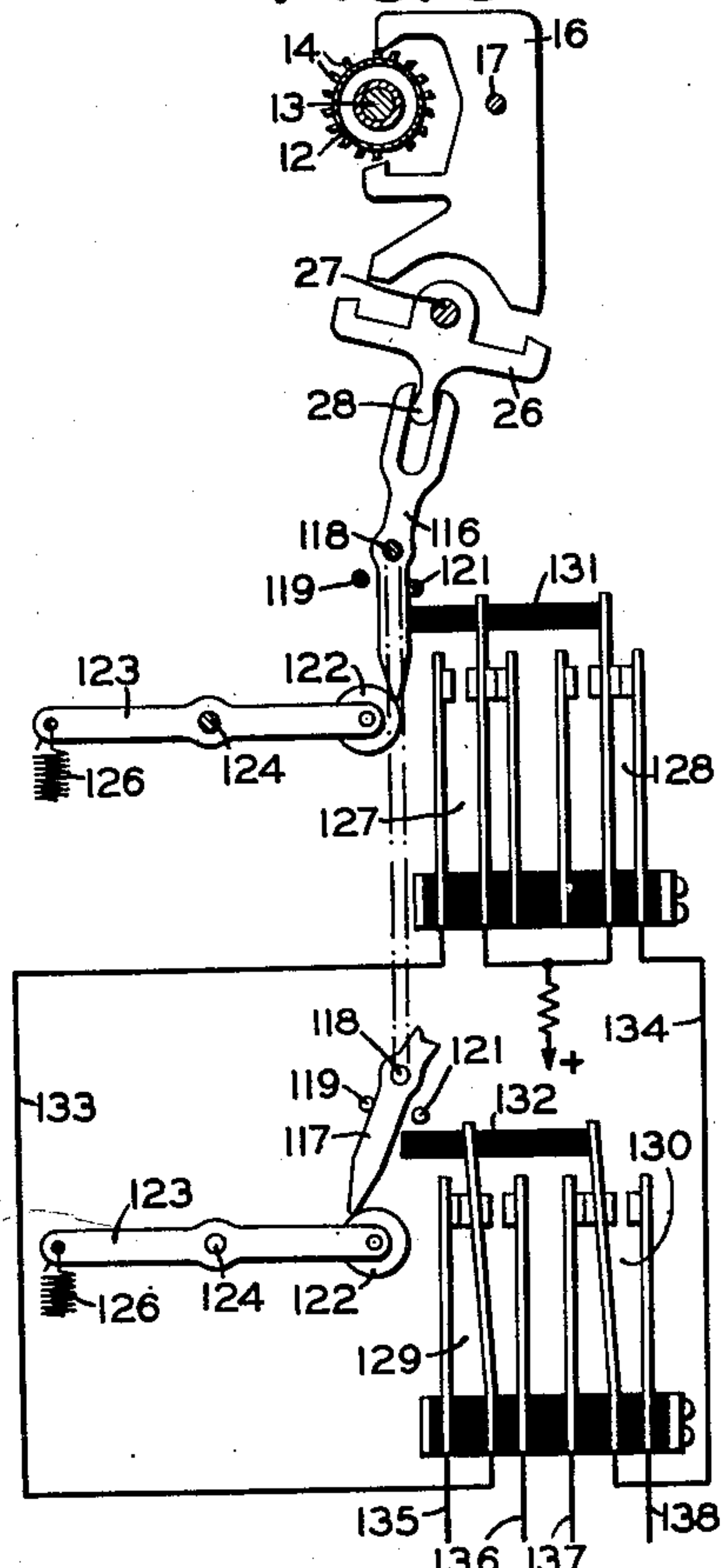


FIG. 3



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MULTITAPE TELEGRAPH RECEIVER

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This invention relates primarily to telegraph receivers and more particularly to telegraph receivers or tickers of the general type employed to record stock quotations and financial news on a tape. This type of telegraph receiver adapted to print on a single tape is generally well known in the art and has been employed for recording stock quotations etc. for many years.

Telegraph receivers or tickers in general use at present for the recording of stock quotations, etc. and particularly those known in the art as high speed tickers which are used, for example, in recording the prices of stocks on the New York Stock Exchange are capable of operating at such a high rate of speed that when used on other services which are usually less busy, they are idle a large portion of the time as the volume of business on many smaller exchanges is not sufficient to keep the high speed tickers operating at their maximum capacity. Where separate tickers are employed, and such is usually the case, to record the news and quotations from each one of the smaller exchanges, each of such services require a separate wire system and when the volume of business is not sufficient to keep the tickers and wire systems reasonably busy the result is inefficient use of the systems and tickers.

Heretofore arrangements have been made for recording the quotations from two or more smaller exchanges on a single ticker and have such tickers served by a single wire system. This arrangement eliminates the necessity of having several separate wire systems, one for each exchange, with a like number of tickers at each receiving point and obviously more efficiently employs the wire system used in such an arrangement. In this arrangement the quotations from all of the exchanges comprising the composite system are recorded on a single tape with the quotations from each one of the exchanges usually being designated or distinguished by some predetermined distinguishing character transmitted before or after each quotation or group of quotations from a particular exchange. Although such an arrangement makes more efficient use of the tickers and a wire system it has the disadvantage of recording all the quotations from the various exchanges on a single tape and anyone desiring to read the prices or quotations from a single exchange has to review the entire tape which has quotations thereon from the other exchanges. If the particular exchange an observer is interested in happens to be less busy

than some of the other exchanges on the same system, the observer may have to review a considerable length of tape before finding the desired quotations and such an arrangement is more or less confusing. In addition the various exchanges may use similar symbols for different commodities and the observers would have to determine from which exchange the particular quotation was received resulting in delay and confusion.

In the above arrangement the transmission to the one wire system of quotations from a plurality of exchanges may be effected in any one of a number of well known manners, such as for example where an editor reviews the quotations received from the various exchanges and retransmits them over the wire system employing the tickers used to record the quotations from the plurality of exchanges. Also the transmission to the ticker system from several exchanges may be effected automatically by permitting each to send for a certain interval with proper safeguards as to duration and other features.

To eliminate the disadvantages of having the quotations from several exchanges printed or recorded on a common tape while at the same time effecting the economies attendant in employing a single wire system and single tickers at receiving points, it is the primary object of this invention to employ a single wire system for disseminating the quotations from the plurality of exchanges and provide a single ticker or receiver for recording the quotations from each exchange on separate tapes, the one ticker being employed to control the printing on the separate tapes.

While the above object of providing a single ticker for selective recording on a plurality of tapes is the primary object of the invention other objects thereof will appear hereinafter.

For a comprehensive understanding of the invention and the various features and operations of the same, reference is had to the following detailed description thereof taken in conjunction with the accompanying drawing in the latter of which:

Fig. 1 is a diagrammatic view of the essential elements of a telegraph printer such as a high-speed ticker, together with elements for controlling the printing on and advancing the various tapes.

Fig. 2 is a plan view with some of the elements broken away showing the printing and tape control mechanisms, and

Fig. 3 is a diagrammatic view of a modification of a selecting arrangement employed to select the various printing units.

The invention is shown and hereinafter described as being associated and operating in conjunction with a high-speed ticker, such a ticker being fully shown and described in a patent to S. Morton et al. No. 1,821,110, issued September 1, 1931. However, the application of the invention as will be hereinafter apparent, is not limited to this particular type of ticker as the principles of the invention could be equally well applied to various other receivers, the above mentioned high-speed ticker being employed in conjunction with the invention merely for the purpose of illustration and the description of the ticker will hereafter be limited to its general operation and to the operation of the elements cooperating with the elements of the invention.

As hereinbefore stated, the invention in general contemplates the employment of a single ticker responsive to signals representing quotations from a plurality of exchanges with means at the ticker for selectively choosing a tape representing the particular exchange from which the signals originated and recording associated quotations thereon. Each tape representing a particular exchange has its own separate printing and tape-advancing mechanisms and during the recording of quotations on one tape, the recording and tape-advancing mechanisms associated with the other tapes are disabled. Hence printing occurs only on one tape at a time and printing on a particular tape represents the signals from an associated and predetermined exchange.

In the preferred embodiment of the invention the selection of the various tapes is effected by the receipt of selecting signals transmitted as complete code groups of impulses in themselves, and they determine which one of the tapes the following signals will be recorded upon. The selected one of the tapes continues to have following signals recorded thereupon until the transmission and receipt of another selecting signal, each of the tapes and printing mechanisms having their own associated selected signals.

In the modified embodiment of the invention the selection of the various tapes and printing mechanisms is effected by the transmission of pre-selecting impulses transmitted in conjunction with each signal group of impulses. Thus, in the modified embodiment a tape and its associated printing mechanism is selected in conjunction with the receipt of each code group of impulses or the recording of each character.

Referring first to Fig. 1 which shows the preferred embodiment of the invention wherein separate selecting signals are transmitted preceding each code group of impulses to select which one of the tapes will have following signals recorded thereon, the selector magnet 11 controls the operation of the ticker as hereinafter pointed out in response to signal impulses received over the line L. The high-speed ticker is adapted to operate on a start-stop principle and in the preferred embodiment each code group of impulses comprises eight separate impulses, the first being a start impulse of invariable character followed by six intelligence impulses varying in accordance with the character or function to be printed or performed and terminated by a stop impulse of invariable character and opposite to the start impulse. Of the six intelligence im-

pulses five determine the stop position of the typewheel while the sixth intelligence impulse determines whether a figure or letters character will be recorded.

The selector magnet 11 operates in response to the start impulse to initiate rotation of a frictionally driven cam drum or pin barrel 12 driven from a constantly rotating shaft 13. Arranged around the periphery of the pin barrel 12 are pins 14 which cooperate with selectors 16, only one of which is shown in Fig. 1, to operate the same in accordance with the associated signaling impulses as will appear hereinafter. There are as many selectors 16 as there are intelligence impulses in each code group and all are pivotally mounted side by side on a pivot rod 17. There are two pins 14 on the pin barrel for each selector 16 and in accordance with the particular signaling impulse, the pin barrel 12 is moved axially along the shaft 13 to bring either one or the other of a pair of pins into operative engagement with the associated selector. The means of controlling start and stop of pin barrel 12 and means of moving it axially along the shaft 13 in response to impulses received by magnet 11 is not shown or described herein as it is considered unnecessary for a complete understanding of the invention. However, this description appears in the above mentioned patent. Each selector has two arms 18 and 19, the arm 18 extending above the pin barrel with the arm 19 extending below the pin barrel and depending upon the axial position of the pin barrel 12, one or the other of the pins of a set will engage either the upper or lower arm 18 and 19, respectively, of the associated selector 16. If a pin 14 of the pin barrel engages the upper arm of a selector 16, it is pivoted a slight amount in a clockwise direction whereas if a pin engages the lower arm 19, the selector is pivoted a slight amount in a counter-clockwise direction. Detents (not shown) cooperate with the selectors 16 to maintain the same in either one or the other of their two operated positions or until the position thereof is changed by a pin engaging the opposite arm.

Each selector 16 has two downwardly extending arms 21 and 22 which cooperate in a manner hereinafter pointed out with upwardly extending arms 23 and 24, respectively, of associated transfer lever 26, only the one transfer lever which cooperates with the selector 16 being shown in Fig. 1.

The speed of rotation of the pin barrel 12 is such that the pins 14 thereon successively cooperate with the selectors 16 during the receipt of respective intelligence signaling impulses and accordingly the selectors are set in either one of their two positions in accordance with their respective signaling impulses. After positioning of the selectors 16 in accordance with the received code group of impulses, the stop impulse is effective to stop the pin barrel 12 in its normal rest position.

During the rotation of the pin barrel 12, an operating cam (not shown) is released for one revolution at a time and during the rotation thereof performs various printer functions in conjunction with each received code group of impulses. The transfer levers 26 are pivotally mounted at 27 and the operating cam (not shown) causes the elevation of the transfer levers and their pivot.

As the transfer levers 26 are raised, either one or the other of the arms 23 or 24 thereof engage

with one or the other of the arms 21 and 22, respectively, of the associated selectors 16. Which one of the arms of a selector 16 is engaged by an arm of a transfer lever 26 is determined by the position of the selector and it in turn causes either clockwise or counter-clockwise pivoting of the transfer levers 26 as they engage the selectors.

Extending downwardly from five of the transfer levers 26 are round-ended arms 28, which are engaged in slots 29 of associated code discs 31. The code discs 31 are arranged for rotary movement within predetermined limits about the axis of a typewheel shaft 32 extending through the centers thereof. The code discs 31 are positioned into one or the other of their two operated positions as the transfer levers move into contact or engagement with their associated selectors 16. Predeterminedly arranged around the code discs 31 are notches such as 35, the notches in each code disc being arranged differently from those in each of the others and cooperating with the notches are a series of stop pins 33. The stop pins 33 are urged toward the center of the typewheel shaft 32 by springs (not shown) and for each combination of settings of the code disc 31 a row of notches therein are in alignment, permitting a particular one of the stop pins to move into the aligned row of notches. Fixed to the typewheel shaft 32, which is frictionally driven by means not shown, is a stop arm 34 and when a stop pin is selected by being allowed to enter an aligned row of notches in the code discs 31, the end of the stop pin is moved into the path of the end of the stop arm 34 to stop the same thereat. The code discs 31 have no normal position and when the position thereof is changed in accordance with a following setting of the selectors 16, the selected stop pin 33 is cammed away from the shaft 32 by the notches in the code discs and causes disengagement thereof with the end of the stop arm 34, freeing the stop arm for rotation whereupon it rotates until it engages the stop pin selected in accordance with the new setting of the code discs 31. Thus the typewheel shaft 32 is stopped in any one of a plurality of positions by the stop pins 33 with the stopped position thereof corresponding to the received code group of impulses.

The transfer lever 26 not associated with a code disc 31 is called the shift transfer lever and has associated therewith a shift lever 36. The shift lever 36 is raised with the transfer lever 26 and is positioned into one or the other of its two operated positions depending on the position of its associated selector 16. The lower end of the shift lever 36 is bifurcated and engages an arm 37 extending from a shift bail 38, Fig. 2. In the high-speed ticker the typewheel has two rows of characters thereon, a figures row and a letters row, and the shift lever 36 in a manner hereinafter pointed out determines whether a letter or figure will be printed on the printing operation performed in conjunction with the received code group of impulses.

In accordance with the invention the regular typewheel shaft of the high-speed ticker is replaced by a shaft 32 which extends toward the front and has spaced along the extension thereof four typewheels 40, 41, 42 and 43. The typewheels are clamped to the typewheel shaft 32 for rotation therewith and are so arranged that when the typewheel shaft 32 is stopped in any one of its selected angular positions by a stop pin 33, the same letter or figure on all the type-

wheels 40 to 43 are in printing position. However, as hereinafter pointed out, printing is effected from only one of the typewheels at a time. Associated with the under side of each one of the typewheels 40 to 43 are two printing hammers such as 44, all being pivotally mounted adjacent their left hand ends on a common pivot rod 45. Normally all the print hammers 44 rest against a common back stop rod 47 extending therebeneath and out of engagement with associated typewheels. Each one of the two print hammers of a set is in alignment with an associated row of characters or type on the associated typewheel and the actuation or operation of either one or the other of the hammers determines whether figures or letters are recorded. When a hammer 44 is actuated, it presses an associated tape such as 48 against the typewheel to receive an imprint therefrom. The tapes 48 are suitably guided beneath the typewheel and over the hammers 44 by guides not shown.

Associated with each one of the typewheels 40 to 43 are individual print control magnets 50 to 53, respectively, each having an armature 54 pivotally mounted at its lower end on rods such as 56. The armatures 54 of the print control magnets 50 to 53 are normally biased to their right hand or retracted positions by associated springs 57 and pivotally attached to the upper ends of the armatures 54 and extending therefrom toward the right are interponents 58, each armature having two interponents. The interponents 58 are normally held down against a back stop 59 by attached springs 61 and each interponent is in alignment with an associated one of the print hammers 44. The interponents 58 have at their right hand ends upwardly extending projections 62 and with the interponent in its normal unoperated position, the projection 62 is out of alignment with the right hand end of the associated print hammer 44. Accordingly, when an interponent is pivoted in a counter-clockwise direction in a manner hereinafter pointed out, the associated print hammer is not actuated. The interponents 58 associated with the typewheels 40 to 42 are shown in their unoperated positions whereas those associated with the typewheel 43 are shown in their operated positions with the projection 62 thereon directly beneath the ends of the associated print hammer 44. Thus when either one or the other of these two interponents is actuated, an associated print hammer 44 is also actuated to press the tape 48 against the typewheel 43 and record a character therefrom.

In order that only one of the print hammers of a set be actuated at a time, the shift bail 38 is employed. The shift bail 38 extends beneath all of the interponents 58 and is pivotally mounted on a rod 63 carried in the left hand ends of a striker bail 64. The striker bail 64 is U-shaped and is pivotally mounted on a fixed pivot rod 66. Fixed to the striker bail 64 is an operating arm 67 which is adapted to operate the striker bail once for each cycle of operation of the receiver to elevate the shift bail 38.

The shift bail 38 is shifted by the shift lever 36 as hereinbefore pointed out to bring either one or the other of two sets of adjustably carried pins 68 and 69 directly beneath associated interponents 58. With the shift bail 38 in its shift position as shown in Figs. 1 and 2, the pins 68 thereon are in direct alignment with the interponent 58 associated with the hammers 44 in

line with the figures rows of characters on the associated typewheels 40 to 43. Accordingly each time the striker bail 64 operates with the shift bail in this position, the pins 68 engage associated interponents 58 to elevate the same. However, since the projections 62 on only one set of the interponents 58 are in alignment with the ends of an associated set of print hammers, only one print hammer will be actuated to press the associated tape 48 against a typewheel. With the shift bail 38 in its other or unshift position, the pins 69 thereon are adapted to operate the interponents 58 beneath the hammers 44 associated with the letters rows of characters on the typewheel and depending upon which one of the print control magnets 50 to 53 is operated at this time, the associated letters print hammer is actuated to press the recording tape against a letters character on the typewheel. Thus only either one or the other of the two print hammers 44 associated with the print control magnet that is energized is actuated during operation of the striker bail 64 while the shift bail 38 determines which one of these two hammers 44 is operated at a time. Accordingly only the tape 48 associated with the energized print control magnet will have characters recorded thereon one at a time, an operation of the striker bail 64. The manner of selectively operating a particular one and only one of the print control magnets 50 to 53 at a time will hereinafter be pointed out.

Only the tape 48 associated with the typewheel from which recordings are being made should be advanced while those associated with the other typewheels are not, and the arrangement for accomplishing this will now be described. A feed bail 70 pivotally mounted at 71 is oscillated once for each cycle of operation of the printer. The feed bail 70 carries at its left hand end an operating pawl 72 which cooperates with a feed ratchet 73 to rotate the same one step for each oscillation of the bail. The ratchet 73 is fixed to a shaft 74 which extends over all the tapes 48 and fixed in spaced relation along the shaft 74 are feed wheels or rollers 76, one associated with each of the tapes 48. Beneath each of the feed rollers 76 are associated pressure rollers 77 pivotally carried at the end of leftwardly extending arms 78 of associated bell crank levers 79. The bell crank levers 79 are pivotally mounted at 81 and depending arms thereof carry armatures 82. The armatures 82 are in operative relation with associated feed control magnets 83 to 86. When one of the feed control magnets 83 to 86 is energized, the associated bell crank lever 79 is pivoted in a clockwise direction to move the associated pressure roller 77 and tape 48 against the feed wheel or roller 76 thereabove. Hence when the shaft 74 is rotated by the feed pawl 72, together with the feed rollers 76, the tape 48 held in contact with one of the feed rollers by the associated pressure roller 77 will be advanced a predetermined amount concomitantly with each cycle of operation of the receiver. The bell crank lever 79 associated with the typewheel 43 is shown in its operated position holding the tape 48 against the associated feed wheel 76, whereas the bell crank levers associated with the other typewheels are shown in their unoperated positions. Where the tapes 48 are not held in engagement with their associated feed wheel the same will not be advanced as the feed wheels rotate. Springs 87 associated with each of the bell crank levers 79 normally hold the same against stops 88.

It will be noted that all of the tapes 48 associ-

ated with other than the operated print control and feed control magnets 83 and 86, respectively, as shown in Fig. 1, are free. This allows the tapes on which characters are not being recorded to be manually advanced to allow the last character recorded thereon to be pulled out from beneath the typewheel without disturbing the associated tape feeding mechanisms. As the last character recorded on the tape is directly beneath the typewheels, unless a number of tape feeding operations are performed, the freeing of the tapes in the non-operative printing units is one of the features of the invention.

The manner in which a particular one of the feed control magnets 83 to 86 is operated at a time will be described hereinafter in conjunction with the selection of one of the print control magnets 50 to 53 for operation.

The selection of the print control and feed control magnets for operation is effected through the operation of predetermined of the stop pins 33 and shift lever 36. Associated with the upper end of shift lever 36 is a contact 89 with an insulating member 91 on one of the springs thereof adapted to cooperate with the shift lever in such manner that when the shift lever is in shift position the contact 89 is closed and with the shift lever in an unshift position the contact is open. One of the springs of the contact 89 has battery applied thereto while the other spring thereof is connected by a conductor 92 in parallel to one of the springs or elements of each of four contacts 93 to 96. The contacts 93 to 96 have a stationary element and a movable element to which is attached an insulating member such as 97 which cooperates with predetermined of the stop pins 33, the insulating member 97 of contact 93 cooperating with stop pin 33a, that of contacts 94, 95 and 96 with stop pins 33b, 33c and 33d respectively. The movable element of contact 93 is connected by a conductor 98 through the upper coil of relay 99 and thence through its lower coil to ground and also by conductor 101 through the lower coils in parallel of relays 102, 103 and 104 to ground. The stationary element of contact 94 is connected by a conductor 100 through the upper coil of relay 102 also through its own lower coil to ground and thence by conductor 101 through the lower coils of relays 99, 103 and 104 to ground. Similarly the stationary element of contact 95 is connected by a conductor 107 through the upper coil of relay 103 and thence in parallel through its own lower coil and the lower coils of relays 99, 102 and 104 to ground. The stationary element of contact 96 is connected by conductor 108 through the upper coil of relay 104 and thence in parallel through its own lower coil and the lower coils of relays 99, 102 and 103 to ground. The right hand stops of the relays 99, 102, 103 and 104 are connected in parallel by conductor 109 to battery. The tongue of relay 99 is connected by conductor 111 through the feed control and print control magnets 83 and 86, respectively, to ground associated with the typewheel 40. Similarly the tongues of relays 102, 103 and 104 are connected by individual conductors 112, 113 and 114, respectively, through the feed and print control magnets associated with the typewheels 41, 42 and 43, respectively.

The contacts 93 to 96 associated with the stop pins 33a to 33d, respectively, are arranged so that with the associated ones of the stop pins in their normal unselected positions the contacts are held open and when the code discs 31

are moved so as to allow the selection of one of these stop pins the associated contact and only this one is allowed to close. Let it be assumed, for example, that it is desired to print or record on the tape 48 associated with the typewheel 43, accordingly it is necessary as pointed out above to cause the energization of the print and feed control magnets 53 and 86, respectively. The predetermined code group of impulses for effecting this operation is such that the shift lever 36 is moved to its shift position and the code discs 31 positioned to allow the selection of the stop pin 33d. The operation of the shift lever 36 to its shift position allows the contact 89 to close applying battery over conductor 92 to one spring of the contacts 93 to 96 and while contact 89 is closed the pin 33d allows contact 96 to close.

The closing of contacts 89 and 96 simultaneously completes a circuit from battery at contact 89 over conductor 92, through contact 96, over conductor 108, through the upper coil of relay 104 and thence via conductor 101 through the lower coils of relays 99, 102, 103 and 104 to ground. The coils of the relays 99, 102, 103 and 104 are so arranged that the above described circuit causes the tongues of the first three, namely 99, 102 and 103 to move to the left while the tongue of relay 104 moves to its right hand stop. The upper coil of relay 104 has the full current passing therethrough while its lower coil has only one-fourth of the current opposing it. The right hand stop of relay 104, like that of the other relays, has potential applied thereto and as its tongue makes engagement therewith potential is applied over conductor 114 through the feed control and print control magnets 86 and 53, respectively, to ground causing the energization of these magnets. The movement of the tongues of the relays 99, 102 and 103 to their left hand stops opens the circuit to the one of the print and feed control magnets that happened to have been previously energized. Hence all of these magnets will at this time be deenergized and the associated print and tape feed mechanisms disabled. The relays 99, 102, 103 and 104 are such that the tongues thereof remain on either their left or right hand stop as moved by currents in their operating coils and although a part of the current flowing in the upper coils of the relay 104 is permitted to flow through the lower coil thereof, the upper coil has a predominating effect on the control of movement of the tongue. Thus the circuits to the print and feed control magnets associated with typewheels 40 to 42 remain incompletes while the circuit to the magnets associated with the typewheel 43 remains completed until the condition of the relays is changed in accordance with the operation of one of the contacts 93 to 95 in conjunction with the operation of the contact 89. Accordingly, all following quotations or signals received on the printer will be recorded on the tape 48 associated with the typewheel 43.

It will be noted that the shift lever 36 has to be in its shift position before the contact 89 can be closed and therefore the condition of the relays is not changed unless the contact 89 is closed on the selection of one of the pins 33a to 33d, hence the printing of letters character selected by the selection of one of the stop pins 33a to 33d does not effect the operation of any of the print and feed control magnets 50 to 53 and 83 to 86 respectively.

In a manner similar to that described above, the selection of one of the stop pins 33a, 33b or

33c, with the shift lever 36 in its shift position, operates the relays 99, 102, 103 and 104 to effect printing on either one of the tapes 48 associated with the typewheels 40, 41 and 42, respectively.

Although it is shown and described above how to select the printing and tape feeding units associated with four separate tapes it is obvious that by the employment of fewer or more contacts such as 93 to 96 the number of tapes and printing units controlled by one ticker could be changed. The limiting factors determining the number of printing units employed are the number of available stop pins such as 33a to 33d which do not have used characters assigned thereto in the figures position and the average number of quotations per unit of time usually transmitted in conjunction with the quotations and news from such exchange.

In the modification of the invention shown in Fig. 3 two extra sets of pins of two each such as 14 are added to the pin barrel 12, also two extra selectors such as 16 and two extra transfer levers such as 26 are added. Associated with the two extra transfer levers are two contact operating levers 116 and 117. The contact operating levers are pivotally mounted adjacent their centers on a pivot 118 and have the upwardly extending ends thereon bifurcated to engage rounded depending sections such as 28 of associated transfer levers 26. Depending upon the position of the selectors 16 at the time the transfer levers 26 are moved into engagement therewith the contact operating levers 116 and 117 are pivoted a slight amount either in a counter-clockwise or clockwise direction. Stops 119 and 121 on either side of the contact operating levers 116 and 117 limit the pivoting movement thereof. Associated with the lower ends of the contact levers are jockey rollers 122 carried in the right hand ends of associated pivoted jockey levers 123. The levers 123 are pivoted adjacent their centers on a pivot pin 124 and have individual springs 126 at their left hand ends which tend to pivot the levers in a counter-clockwise direction. The rollers 122 co-operating with the contact operating levers 116 and 117 jockey the same into either one or the other of their two operated positions.

Associated with the contact operating lever 116 are two contacts indicated in general by reference numerals 127 and 128. Similarly, two contacts indicated in general by reference numerals 129 and 130 are associated with the contact operating lever 117. The contacts 127 to 130 each have two stops with a movable tongue disposed therebetween, the tongue being biased toward their left hand stops. Tongues of the contacts 127 and 128 are connected together by an insulating member 131 engageable with the contact operating lever 116 at a point below the pivot 118. A similar insulating member 132 connects the tongues of relays 129 and 130 for operation together and is operable by the contact operating lever 117. The tongues of the contacts 127 and 128 have battery applied thereto and the left hand stop of the contact 127 is connected by a conductor 133 to the tongue of contact 129 while the right hand stop of contact 128 is connected by a conductor 134 to the tongue of contact 130. Extending from the left and right hand stops of the contacts 129 and 130 are individual conductors 135, 136, 137 and 138. With these conductors connected to conductors such as 111 to 114 of Fig. 1 the selective operation of the contact operating levers 116 and 117 in a manner hereinafter described permits operation of one

set of print and feed control magnets 50 to 53 and 83 to 86 respectively at a time. Obviously in the embodiment shown in Fig. 3, the relays 99, 102, 103 and 104 together with the contacts on the shift lever and the stop pins 33a to 33d are not required.

In the embodiment shown in Fig. 3 the two intelligence impulses accompanying each code group are employed to operate the selectors 116 and 117 and they are pivoted into either one or the other of their two operated positions in accordance with the character of these two signaling impulses. These signaling impulses which may be called pre-selecting impulses are transmitted along with each of the groups of intelligence impulses that cause the selective operation of the code discs 31 and shift lever 36 and depending upon the operation of these contact operating levers, potential is applied to any one of the conductors 135 to 138 at a time. As the application of potential to these conductors occurs prior to the accompanying operation of the striker bail 64 for the accompanying cycle of operation of the receiver, the print control and feed control magnets associated with the tape 48 upon which it is desired to record the accompanying character will be energized to cause recording of the character on that particular tape.

With the contact operating lever 116 against its right hand stop 121 and the contact operating lever 117 against its left hand stop 119, as shown in Fig. 3, a circuit is completed through the tongue and right hand stop of contact 128, over conductor 134, through the tongue and left hand stop of contact 130 and over conductors 137 and 113 through the feed control and print control magnets 85 and 52 respectively to ground. Accordingly the accompanying character will be recorded on the tape 48 associated with the typewheel 42. In a similar manner any one of the tapes associated with the other typewheels 40, 41 or 43 could be selected to have characters recorded thereon by the proper positioning of the contact operating levers 116 and 117. With two contact operating levers connected as shown it is possible to select any one of four print control and feed control magnets and by changing the number of extra selectors such as 116 and associated contact operating levers such as 116 and 117 the number of tapes capable of having characters recorded thereon could be changed.

Although the invention has herein been described for operation in conjunction with the recording on tapes it will be obvious that with modifications as taught by the principles of the invention, an arrangement could be provided for selectively recording on any one of a plurality of pages. In such an arrangement four movable typewheels moving together could be employed to move across associated pages.

The invention has been described and shown as illustrating how the quotations from four exchanges received over a single line may operate a single ticker to record the quotations on four separate tapes, each exchange having its respective tape. If a customer had no desire for the quotations from one or more of these four exchanges while desiring the quotations from the other exchanges all that would be necessary would be to permanently open the circuit to print and feed control magnets normally controlling the printing of the quotations from the exchanges not wanted.

It will also be obvious that various other modi-

fications 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 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 telegraph receiver, a selector for controlling said telegraph receiver and responsive to received code groups of impulses, a plurality of recording tapes, a plurality of separate printing and tape feeding mechanisms one of each associated with each recording tape, means controlled by said selector mechanism operable in response to predetermined code groups of impulses for selectively rendering said printing and associated tape feeding mechanisms operative and selectively controlling the selected printing mechanisms to record following code groups of impulses on associated tapes and advance the same in conjunction with each recording and means for rendering the others of said printing and tape feeding mechanisms inoperative and freeing the tape at said inoperative tape feeding mechanisms.

2. In a telegraph receiver, a selector mechanism for controlling said telegraph receiver and responsive to received code groups of impulses, a plurality of recording tapes, a plurality of separate printing and tape feeding mechanisms one of each associated with each recording tape, means controlled by said selector mechanism responsive to signal impulses accompanying each code group of impulses for selecting upon which of said recording tapes the character represented by the accompanying character determining impulses are recorded, means controlled by said selector mechanism for recording on the selected of said tapes and means for rendering only the printing and tape feeding mechanisms associated with said selected tape or tapes operative to record the characters representing the accompanying code group of impulses thereon and advance the tape or tapes respectively.

3. In a telegraph machine having a plurality of character selecting elements and a case shift selecting element, a selector mechanism for selecting said character and case shift selecting elements responsive to received permutation signals, each permutation consisting of character selecting conditions and a case shift selecting condition, contacts associated with predetermined of said character selecting elements and a contact associated with said case shift selecting element, a plurality of recording tapes in said telegraph machine and means controlled by the operation of said case shift selecting element contact and at least one of said character selecting element contacts for recording said permutation signals on only predetermined of said recording tapes.

4. In a telegraph machine having a plurality of character selecting elements and a case shift selecting element, a selector mechanism for selecting said character and case shift selecting elements responsive to received permutation signals, each permutation consisting of character selecting conditions and a case shift selecting condition, contacts associated with predetermined of said character selecting elements and a contact associated with said case shift selecting element, a plurality of recording tapes in said telegraph machine and means controlled by the operation of said case shift selecting element contact and at least one of said character selecting

element contacts for recording said permutation signals on one only of said recording tapes and advance the same concomitantly with the recording operation while preventing recording of an advancement of the others of said recording tapes.

5. In a telegraph receiver having a plurality of character selecting elements and a case shift selecting element and comprising a selector mechanism responsive to received permutation signals having character selecting and case selecting conditions, a plurality of recording units in said receiver having separate recording mediums, a control means including said selector mechanism for each recording unit and means controlled by the combined positions of said character selecting elements and said case shift selecting element for selectively operating said recording unit control means to selectively record characters representing said permutation signals on predetermined of said separate recording mediums.

6. In a telegraph receiver having a plurality of character selecting elements and a case shift selecting element and comprising a selector mechanism responsive to received permutation signals having character selecting and case selecting conditions, a plurality of recording units in said receiver having separate recording mediums, a control means including said selector mechanism for each recording unit, means controlled by the combined positions of said character selecting elements and said case shift selecting element for selectively operating said recording unit control means to selectively record characters representing said permutation signals on predetermined of said separate recording mediums, means for advancing the recording medium concomitantly with the recording of a character thereon and means controlled by said recording medium control units for preventing the advancement of the others of said recording mediums.

7. In a telegraph machine having character selecting and case selecting elements selectively controlled by received permutation signals, a first means controlled by said selecting elements operative to select case characters for recording, contacts associated with certain of said selecting elements, a plurality of recording mediums and a second means including said contacts for recording said characters selected by said character and case selecting elements on one or another of said recording mediums.

8. In a telegraph receiver selectively responsive to received permutation groups of signals and having a set of selectors one for each intelligence impulse of said groups selectively positioned in accordance therewith, a plurality of recording mechanisms in said receiver, means controlled by predetermined of said selectors for selecting a character in each of said recording

mechanisms and means controlled by other of said selectors for selecting predetermined of said recording mechanisms to record the character selected by the predetermined of said selectors.

9. In a telegraph receiver selectively responsive to received permutation groups of signals, each of said groups comprising character and recorder unit selecting impulses, a plurality of recording units, means controlled by said character selecting impulses for selecting a character in each of said recording units, means controlled by said recorder unit selecting impulses for selecting which of said recording units will record the characters selected by the accompanying character selecting impulses.

10. In a cyclically operable telegraph receiver selectively responsive to received groups of signals, each of said groups comprising character and printer unit selector impulses, a plurality of recording tapes, a like plurality of printing units, means controlled by said character selecting impulses for selecting a character in each of said recording units, a striker bail and feed wheels associated with each of said printing units and invariably operated for each cycle of operation of said receiver, print hammers, interponents and pressure wheels associated with each of said printing units, means controlled by said printer unit selecting impulses to move the interponents of predetermined of said printing units relative to said striker bail and associated print hammers and the pressure wheels and tapes into engagement with associated feed wheels whereby recording of said selected characters occurs on predetermined of said tapes which are advanced concomitantly with the recording thereon.

11. In a cyclically operable telegraph receiver selectively responsive to received permutation groups of signals, each of said groups comprising groups of character selecting and groups of printer unit selecting impulses, a plurality of recording tapes, a like plurality of printing units, means controlled by said character selecting impulses for selecting a character in each of said recording units, a striker bail and feed wheels associated with each of said printing units and invariably operated during each cycle of operation of said receiver, print hammers interponents and pressure wheels associated with each of said printing units and means controlled by groups of printer selecting impulses received before character selecting groups to move the interponents of predetermined of said printing units relative to said striker bail and associated print hammers and the pressure wheels and tapes into engagement with associated feed wheels whereby recording of said selected characters occur on only predetermined of said tapes which are concomitantly advanced with the recording thereon.

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