

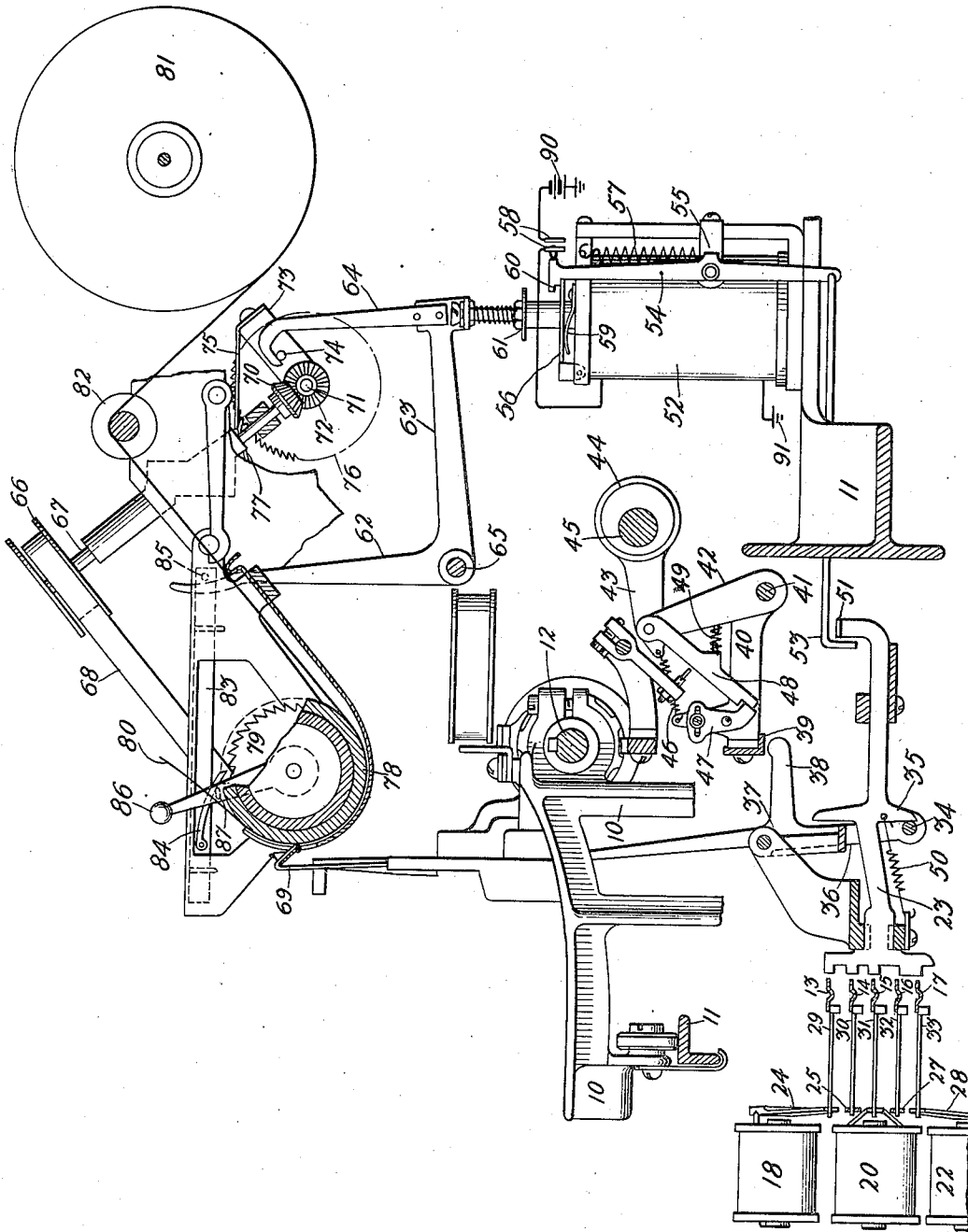
H. PFANNENSTIEHL AND E. F. WATSON.

PRINTING TELEGRAPH.

APPLICATION FILED JAN. 23, 1919.

1,399,993.

Patented Dec. 13, 1921.



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# UNITED STATES PATENT OFFICE.

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## PRINTING-TELEGRAPH.

1,399,993.

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*To all whom it may concern:*

Be it known that we, HARRY PFANNENSTIEHL and EDWARD F. WATSON, citizens of the United States, residing at East Orange, in the county of Essex and State of New Jersey, and at New York, in the county of New York and State of New York, respectively, have invented certain new and useful Improvements in Printing-Telegraphs, of which the following is a full, clear, concise, and exact description.

This invention relates to printing telegraphs and particularly to improvements in printing telegraph receiving apparatus.

The main purpose of this invention is to provide means responsive to line current impulses for operating the line feed and ribbon feed mechanisms jointly.

The invention is disclosed in the accompanying drawings as applied to a telegraph receiving printer comprising selection mechanism, a stationary paper platen and a type carriage adapted to be moved transversely of the printer. The selecting mechanism consists of a plurality of stationary selecting magnets and a corresponding number of horizontal selecting bars controlled by said magnets. The selecting bars extend transversely of the printer and are adapted to be moved in a direction transversely of their length for selection purposes.

A plurality of notched code bars or permutation bars are provided and the arrangement of these bars with respect to the selecting bars is such that when any combination is set up by the selecting magnets, only one of the code bars is permitted to move forward and mesh with the selecting bars.

The above and other objects of this invention will be more fully set forth in the following description and claims, and will be more readily understood by reference to the accompanying drawing which shows an end view of a telegraph receiving printer with certain parts in cross-section and with certain portions of the frame and mechanism eliminated in order to simplify the drawings and to more clearly illustrate the invention.

The mechanism is operated preferably by a five unit code with an additional impulse following each group of five selecting impulses for starting the mechanism in operation. The selecting impulses may consist

of current of different polarity, different strength or the impulses may be formed by simply opening and closing the line circuit as in Morse operation. The impulses may arrive over a line circuit from a distant station and may be relayed or distributed to the selecting magnets by means of a Baudot distributor or any of the well known distributing means.

The invention herein illustrated is an improvement on the system disclosed in an application of Harry Pfannenstiehl, Serial No. 173,546, filed June 8, 1917, and since the above-mentioned copending application describes in detail the various operations of a receiving printer, it is thought to be unnecessary to show a complete structure of a receiving printer but only to show so much of the apparatus as is essential to a clear understanding of the invention.

Referring to the accompanying drawings the type carriage 10 is of a form so well known as to require no detailed description. The type carriage carrying the usual characters to be printed is supported by a portion of the frame structure 11, and a rotatable shaft 12. The selecting mechanism consists of five selecting magnets and five corresponding selecting bars 13, 14, 15, 16 and 17. Only three of the selecting magnets 18, 20 and 22 are shown. The selecting bars 13 to 17 inclusive, extend entirely across the printer at right angles to the permutation bars 23. Each of the selecting magnets is provided with an armature 24, 25, 26, 27 and 28 and extending from the armatures of the selecting magnets to the selecting bars are five latches 29, 30, 31, 32 and 33. The latches normally extend beneath the selecting bars and are adapted to be withdrawn therefrom when the selecting magnets are energized for selecting purposes. Any suitable stopping devices and restoring mechanism may be provided for the selecting bars. For a further detailed description of the selecting mechanism reference may be made to a copending application of Harry Pfannenstiehl and Erwin P. Bancroft, Serial No. 195,712, filed October 10, 1917.

As previously mentioned, the code bars are arranged so that when a selection is received and the selecting bars are selectively actuated, one and only one of the code bars will be permitted to move forward astride

the selecting bars. The code bars 23 are normally held in the position shown by means of a universal bar 34 which is associated with the code bars and extends in front of downwardly extending arms 35 carried by the code bars. The universal bar 34 is supported by a downwardly extending arm 36 of a bell crank lever 37, the other arm of which extends beneath a universal striking bar 39. The striker bar 39 is carried by an arm 40 which is pivotally mounted on a rod 41, which rod may be journaled in the frame of the machine or supported in any suitable manner. Pivotally supported on the rod 41 and adjacent the arm 40 is an upwardly extending arm 42 connected to a reciprocatory member 43 which is reciprocated by a cam 44 carried by the cam shaft 45. Power for operating the cam shaft may be supplied as fully disclosed in the above-mentioned copending application Serial No. 173,546. The striker bar 39 is normally held in the position shown by spring member 46, one end of which is connected to an extension of the bracket arm 40 while the other end of the spring is connected to the reciprocating arm 43. On the extension of the bracket arm 40 is secured an adjustable member 47. The arm 42 carries a member 48 which is normally held in engagement with the adjustable member 47 by a spring 49 and may be held away from the member 47 whenever it is desired to perform some operation by means of the cam shaft which does not require actuation of the striker bar 39. It will readily be seen that when the cam shaft 45 is rotated, the cam 44 will move the arm 43 forward and by means of the connecting member 48 cooperating with the adjustable member 47, the striker bar 39 will be forced downward and by acting on the extension 38 of bell crank lever 37 the universal bar 34 will be moved forward away from the extensions 35 of the permutation bars. All of the permutation bars are normally held clear of the selecting bars by the universal bar 34 and when the bar 34 is moved forward all of the code bars, due to the action of suitable springs 50, will also move forwardly slightly but only the selected code bar will be permitted to move forward astride the selecting bars. The permutation or code bars in moving forward may control members connected to the type bars of the printer or they may be employed for performing various auxiliary operations such as is essential in the operation of a receiving printer. In accordance with applicant's invention a plurality of the auxiliary operations essential in a receiving printer, such as rotating the paper platen to feed the paper for spacing between lines and for operating a ribbon feeding mechanism to present a fresh inking surface for printing, has been combined so that both operations may be performed jointly or simultaneously.

Since in the preferred embodiment herein disclosed the paper platen is stationary and the type carriage movable, there is provided no common printing point. Consequently, it is not necessary to feed the inking ribbon as often or as frequently as if all characters were printed at a common or particular position. Therefore, applicant's invention is directed to the provision of means whereby the ribbon mechanism may be operated once for each line of print or whenever the platen is rotated to feed the printing medium forward for line spacing. For this purpose a special magnet 52 is provided for operating the line feed and ribbon feed mechanisms jointly. The magnet 52 is controlled by a special code bar 23 having an extension 51 on the rear thereof. The code bar when selected is permitted to move forward under the action of a suitable spring 50 and by means of the extension 51 a member 53 is engaged and moved forward. The opposite end of the member 53 is connected to a rocker arm 54 which is pivoted at 55. The opposite end of the rocker arm 54 is normally held against a member 56 by means of a spring member 57 which tends to hold the rocker arm in the position shown. Spring contacts 58 which control the circuit of the magnet 52, are normally opened but are adapted to be closed by the rocker arm 54 when the special code bar 23 is selected. The closure of contacts 58 completes an energizing circuit for magnet 52 from grounded battery to ground at 91. When the arm 54 is rocked to close contacts 58, member 56 is forced upward by means of spring member 59 so that it engages the offset portion 60 of the arm 54 and thereby holds the arm in its actuated position to maintain the contacts 58 closed until the magnet 52 has completed its operation.

The magnet 52 is provided with a plunger or core 61 which controls the movements of a plurality of arms 62, 63 and 64, which arms are pivotally supported at 65. These arms being rigidly connected together are operated simultaneously, arms 62 and 63 controlling the operation of the line feeding mechanism and arms 63 and 64 controlling the operation of the ribbon feeding mechanism. The ribbon mechanism is shown comprising a ribbon spool 66 supported by a rotatable shaft 67 which is supported in any suitable manner in the frame of the machine. The ribbon 68 is fed from a ribbon spool (not shown) through suitable ribbon guiding members 69 in front of the printing elements onto a similar ribbon spool 66 at the opposite end of the printer. On the end of the shaft 67 is a pinion or bevel gear 70. Mounted at right angles to the shaft 67 is a rotatable shaft 71 which also carries a bevel gear 72 adapted to mesh with the gear 70. Loosely mounted on the shaft 71 is an arm 73

carrying a pin 74 and a pawl 75 which pawl is adapted to engage the teeth of the ratchet wheel 76. The arm 64 when actuated, engages the pin 74 carried by arm 73 and thereby effects rotation of the bevel gear 72 through the instrumentality of the ratchet 76 and pawl 75. Actuation of the ratchet 76 imparts rotation to the ribbon spool 66 and thereby advances the ribbon a predetermined amount. The ratchet 76 is also provided with a holding pawl 77 to prevent backward rotation of the ratchet.

The paper platen 78 is provided with a ratchet wheel 79 which is adapted to be actuated for the purpose of rotating the paper platen and feeding the paper 80 forward. The paper 80 may be drawn from a roll 81 over a suitable guide roller 82 and around the platen 78 in the usual manner. Supported in the frame of the machine in any desired manner is a slidable bar 83 carrying an actuating pawl 84. The pawl 84 is adapted to engage the teeth of the ratchet wheel 79 and turn the platen a predetermined amount whenever the bar 83 is actuated. For this purpose the sliding bar 83 is provided with a pin or an extension 85 on the end thereof, which extension is adapted to be engaged by the end of the arm 62 whenever the said arm is rotated about its pivotal bearing 65 in a clockwise direction. Thus it will be seen that whenever magnet 52 is energized the paper platen and the ribbon spool will be rotated simultaneously, thereby controlling the spacing between lines and the advancing of the inking ribbon in one operation.

A lever 86 carrying a pin or cam surface 87 is provided for determining or regulating the extent of rotation of the platen for each actuation of the magnet 52. By moving the lever 86 and pin 87 the actuating pawl 84 may be caused to rotate the platen the extent of one, two or more teeth.

What is claimed is:

1. In a telegraph receiving printer, a paper platen, ribbon feeding mechanism, mechanism for rotating said platen for line spacing, selecting mechanism comprising a plurality of selecting magnets, permutation means controlled thereby, an electromagnet energized upon the positioning of said permutation means in a predetermined manner, and means responsive to the energization of said electromagnet for operating said ribbon feeding and line spacing mechanisms simultaneously.

2. In a telegraph receiving printer, a paper platen, ribbon feeding mechanism, mechanism for rotating said platen for line spacing, selecting mechanism comprising a plurality of selecting magnets, permutation means controlled thereby, an electromagnet

energized upon the positioning of said permutation means in a predetermined manner, and operating levers operated due to the energization of said electromagnet for causing the simultaneous operation of said ribbon feeding and line spacing mechanisms.

3. In a telegraph receiving printer, a revolvable platen, ribbon feeding mechanism, selecting mechanism comprising a plurality of selecting magnets, permutation means controlled thereby, an operating magnet, an energizing circuit therefor, mechanism controlled by said permutation means for closing the energizing circuit through said magnet, and means responsive to the energization of said magnet for rotating said platen and for operating said ribbon feeding mechanism.

4. In a telegraph receiver, a paper platen, ratchet mechanism for rotating said platen for line spacing, ribbon feeding mechanism, a ratchet therefor, and a magnet for operating said ratchet mechanism jointly.

5. In a telegraph receiver, a paper platen, mechanism for rotating said platen for line spacing, a ribbon feeding mechanism, an electromagnet, an energizing circuit therefor, means for closing said energizing circuit, means for holding said circuit closed, and means responsive to the energization of said magnet for operating said line spacing and ribbon feeding mechanisms and for releasing said holding means.

6. In a telegraph receiver, a paper platen, mechanism for rotating said platen for line spacing, a ribbon feeding mechanism, an electromagnet, an energizing circuit therefor, means controlled by line current impulses for closing said energizing circuit, means for holding said circuit closed, and means responsive to the energization of said magnet for operating said line spacing and ribbon feeding mechanisms simultaneously and for releasing said holding means.

7. In a telegraph receiver, a revolvable platen, ribbon feeding mechanism, selecting mechanism comprising a plurality of selecting magnets, permutation means controlled thereby, an operating magnet, a circuit therefor, means controlled by said permutation means for closing said circuit, means for holding said circuit closed, and means responsive to the energization of said magnet for rotating said platen and operating said ribbon feeding mechanism simultaneously and for releasing said circuit holding means.

In witness whereof, we hereunto subscribe our names, this 18th day of January. A. D. 1919.

HARRY PFANNENSTIEHL.  
EDWARD F. WATSON.