

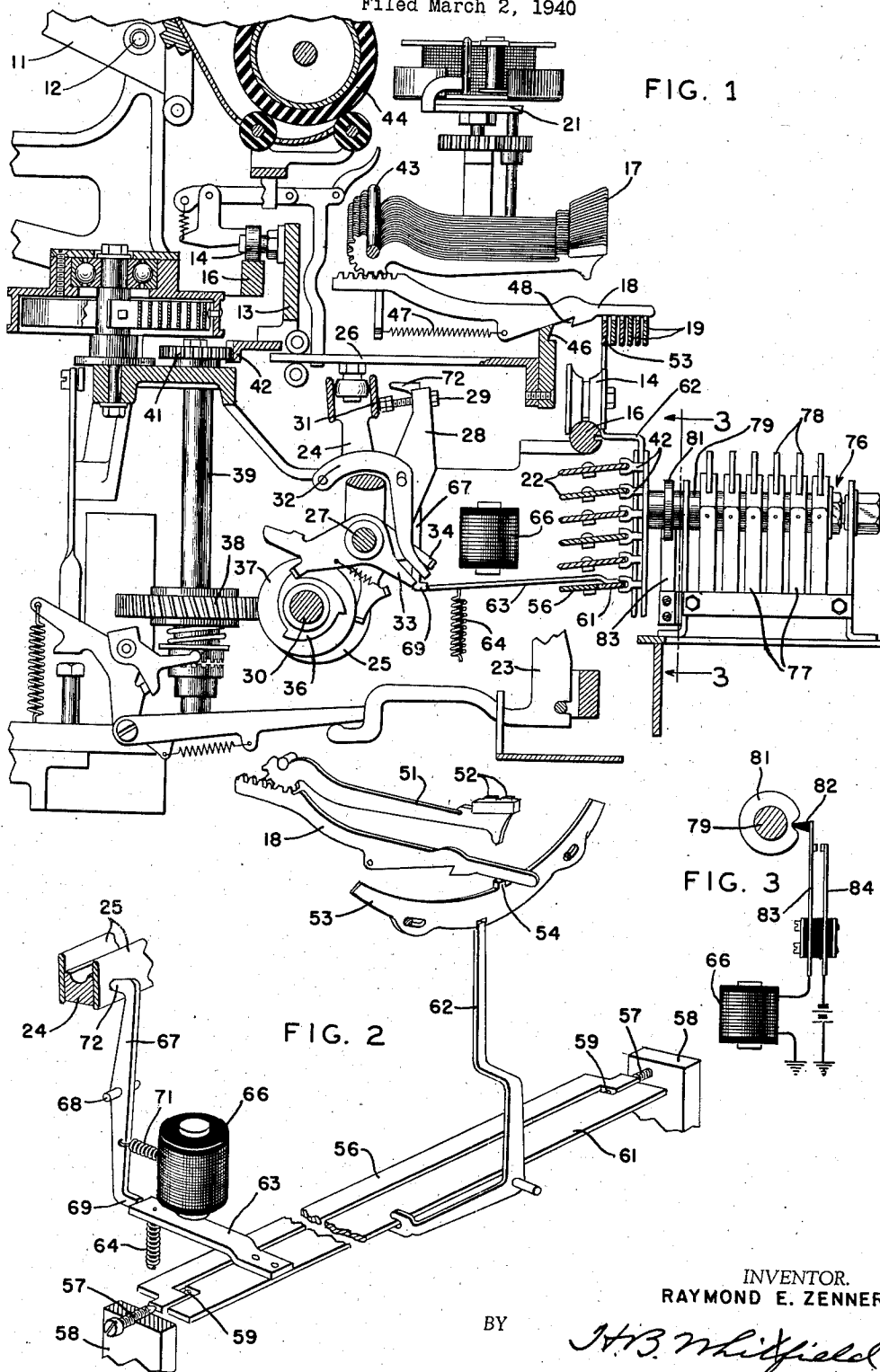
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MESSAGE DIFFERENTIATION APPARATUS

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MESSAGE DIFFERENTIATION APPARATUS

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This invention relates to printing telegraph apparatus and particularly to differentiation between message material representing received signals and message material representing locally generated signals.

An object of the invention is to apply to one of the two classes of message material; namely, transmitted and received, a characteristic which shall distinguish it from the other on the original and on carbon copies.

The invention features apparatus for accompanying the home record of message material transmitted with a special printed character which forms no part of the message but indicates that the message originated locally.

Heretofore it has been proposed to differentiate received message material from transmitted message material by employing a shiftable two-color ink ribbon for printing the characters, one of the color bands of the ribbon being interposed between the printing elements and the printing platen for received messages and the other color band being presented between the printing elements and the platen for printing the home record of transmitted signals. This system is entirely satisfactory where only a single copy of the messages is required. However, when one or more carbon copies of the message are to be printed in addition to the original or ribbon copy, only the original will carry the color differentiation between transmitted and received messages, the carbons being printed in the single color of the carbon and carrying no designation as to which messages were received from a distant point and which were locally generated and transmitted.

According to the present invention, a symbol printing element similar to the letters, figures, punctuation, and other printing elements is provided to be responsive to the signal combination assigned to the insertion of a space between words or letters and identified as the space signal combination. A blocking element is provided which in one position will block the selection of the special character element and in the other position will permit the selection of that element. The blocking member is controlled by the signal transmitting apparatus associated with the printer, so as to move the blocking member into the position in which it does not block the special character printing element when the transmitting mechanism is operated to transmit signals, whereas when the transmitting mechanism is idle, as is the case when the printer is receiving signals from a remote station, the

blocking member is held in blocking relation to the special character printing element. Thus, when the printer is operating in response to received signals, the spaces between words of the message will appear in the normal manner as blank spaces. However, when the printer is recording message material being transmitted from its transmitter, the special character will be printed in the space between words. The special character may be any desired character, such as a dash or an asterisk, which will be readily identifiable as an indication that the message material which it accompanies originated in the transmitter local to the printer and forms no part of the message itself. Two-color ribbon is not required to distinguish the transmitted from the received message material and the special character will appear on any carbon copies that are made when the original copy of the message is recorded.

For a complete understanding of the invention, reference may be had to the following detailed description to be interpreted in connection with the accompanying drawing in which

Fig. 1 is a vertical sectional view of a printing telegraph apparatus including message differentiating apparatus according to the present invention;

Fig. 2 is a schematic perspective view showing the relationship of the elements of the message differentiating apparatus apart from the printer; and

Fig. 3 is a vertical sectional view through the signal transmitting apparatus taken on the line 3—3 of Fig. 1.

Referring now to the drawing, Fig. 1 shows the principal structural details of a type bar page printing telegraph apparatus according to the disclosure of U. S. Patent 1,904,164, granted April 18, 1933, to S. Morton et al. Referring to Fig. 1 the reference numeral 11 designates a pivotally mounted platen carriage, the pivotal position of which about pivot 12 determines the printing of figures or letters, but the carriage 11 is not movable transversely of the printer. A type basket carriage 13 which is supported by roller 14 resting upon rails 16 is movable transversely of the printer for letter spacing and carriage return. Type basket carriage 13 supports type bars 17, pull bars 18, code bars 19, and ink ribbon apparatus 21. Code bars 19 are controlled by selector vanes 22 which in turn are controlled by a single magnet selector mechanism (not shown). Functions are controlled by function levers 23 which are controlled by selector vanes

22. In Fig. 1 the upper end of function lever 23 has been broken away in order to disclose more clearly features of the present invention. The operation of the function levers 23 is controlled by operating bail 24 which also operates print bail 26. Bail 24 is pivoted at 27 and its operating stroke is clockwise as viewed in Fig. 1. A bail restoring lever 28 is also pivoted at 27 and is provided with an abutment screw 29 which engages the front blade 31 of operating bail 24.

The lower end of lever 28 is engageable with a cam 25 carried by continuously rotatable shaft 30 which may impart rotation to the cam through a single revolution positive clutch mechanism (not shown). Operating bail 24 is operable in clockwise direction by a spring (not shown) and is restored to extreme counterclockwise position by lever 28. A spacing lever 32 is carried by bail 24 and has its lower end disposed between the right-hand ends of spacing pawls 33 and 34 which co-operate with spacing ratchet 36 in the manner of an escapement mechanism. Rotation is imparted to spacing ratchet 36 through a friction clutch mechanism and a gear 37 is connected to ratchet 36 to be rotated therewith. Gear 37 meshes with a gear 38 carried by type basket carriage spacing shaft 39. Shaft 39 has secured thereto at its upper end a pinion 41 which meshes with a rack 42 carried by the type basket carriage 13.

The several selector vanes 22 are connected by bell cranks 42 to the code bars 19. When the selector vanes 22 have been set in accordance with a permutation code combination for the printing of a character, the code bars 19 are set correspondingly, and an alignment of notches is presented to the foremost end of the pull bar 18 associated with the type bar 17 which carries the character to be printed. The rearmost end of each pull bar 18 is provided with teeth arranged in the formation of a rack and the type bar 17 associated with it is provided with teeth arranged in the formation of a pinion and meshing with the teeth of the pull bar. Forward (rightward as viewed in Fig. 1) motion of a pull bar 18 will cause the associated type bar 17 to pivot about its supporting rod 43 to strike its type face against the platen 44 rotatably supported in platen carriage 11.

After an alignment of notches has been presented to one of the pull bars 18, the operating bail 24 is released for clockwise movement and the printing bail is moved rightwardly as viewed in Fig. 1. Printing bail 26 is provided with an undercut knife edge bar 46 on which all of the pull bars 18 rest when operating bail 24 is in extreme counterclockwise position and by which the foremost ends of the pull bars 18 are held out of engagement with the upper surfaces of code bars 19 so that those bars may be set permutatively under the control of the selector vanes 22. As the knife edge blade 46 is moved rightwardly by printing bail 26, it slides along the upwardly sloping lower edges of the pull bars 18 permitting them to be lowered by their individual tension springs 47 into engagement with the upper edges of the code bars 19 and permitting any pull bar 18 which finds an alignment of notches to enter that alignment.

Each of the pull bars 18 is provided with a shoulder 48 which is held out of the path of blade 46 when a pull bar rests upon the upper edges of the code bars 19 and which is presented in the path of the blade 46 when a pull bar has entered an alignment of notches in the code bars

19. As blade 46 continues to move rightwardly with printing bail 26, it engages the shoulder 48 of the selected pull bar 18 and reciprocates the pull bar rightwardly thus rocking the associated type bar 17 about its axis and causing a character to be printed. When the operating bail 24 is restored to extreme counterclockwise position by lever 28 operated by cam 25 the printing bail 26 is restored to extreme left-hand position, lifting the foremost ends of pull bars 18 out of engagement with the code bars 19.

The spacing lever 32, being carried by the operating bail 24, actuates the spacing pawls 33 and 34 to effect the spacing of carriage 13 each time that bail 24 is operated. As fully disclosed in the hereinbefore identified patent, spacing of the carriage 13 without printing, such as the spacing of one word from another, is accomplished by providing no pull bar 18 or type bar 17 responsive to the space combination and permitting the operating bail 24 and print bail 26 to operate in the normal manner, no pull bar 18 being engaged or operated, but the spacing lever 32 being operated to operate the spacing pawls 33 and 34 accordingly. When spacing is to be suppressed or prevented, as is the case in connection with certain functions such as the shift and unshift functions, the function lever 23 which is selected to perform the function or initiate the performance of the function limits the movement of operating bail 24 so that it does not move sufficiently far in clockwise direction to actuate pawls 33 and 34 nor to effect the selection and operation of a pull bar 18, even should one be provided for response to the same code combination as the function, which is sometimes the case, as when a function is selected on an upper case combination and a character is printed on the lower case combination corresponding to the same signal.

According to the present invention, a type bar, indicated by the reference numeral 51 (Fig. 2), is provided with a special character face 52 in both the upper and lower case positions. The code bars 19 are so coded with reference to the pull bar 18 for the type bar 51 that an alignment of notches is presented to the pull bar 18 when the code bars 19 are set according to the space code combination. A blocking bar 53 corresponding in contour to the code bars 19 and supported adjacent to them is provided with a single blocking lug 54 which will block the pull bar 18 associated with the special type bar 51 when blocking bar 53 is in one position and will unblock the pull bar 18 associated with the special type bar 51 to permit it to respond to the selective attributes of the code bars 19 when blocking bar 53 is presented in its other position. The movement of the blocking bar is not sufficient to block an adjacent pull bar when the one associated with type bar 52 is unblocked.

In the printing telegraph apparatus shown in the hereinbefore identified patent, there is a sixth vane which is pivotally supported below the lowermost of the five selector vans indicated 22 in the drawing to which the present description relates, the sixth vane not being operated directly by the single magnet selector mechanism, but being controlled instead by the shift and unshift function mechanism of the printer to provide for the blocking of those function bars which are to respond in one case shift condition only of the printer. Such sixth vane is not provided with a bell crank to operate a code bar 19.

According to the present invention two vanes

pivoted upon the same axis have been substituted for the single sixth vane of the printer shown in the previously identified patent. As shown in Fig. 2 the vane 56 which corresponds to the sixth vane for controlling the selection of functions is pivoted on the pivot screws 57 mounted in frame members 58 at the opposite sides of the printer. The main body of the vane 56 is offset rearwardly of the printer from the pivot screws 57, and coaxial with the pivot screws 57 the vane 56 is provided with pivot pins 59 which support a forwardly extending vane 61. A bell crank 62 similar to the bell cranks 42 connects vane 61 to blocking bar 53, and the relation of vane 61 to bar 53 and to the pull bar 18 associated with special type bar 51 is such that when vane 61 is in extreme counterclockwise position, blocking bar is presented in extreme right-hand position, in which position its lug 54 blocks the pull bar 18 associated with type bar 51. When vane 61 is in extreme clockwise position, blocking bar 53 is shifted to its extreme left-hand position and its lug 54 is retracted from alignment with the pull bar 18 associated with special type bar 51.

An arm 63 secured to vane 61 has an offset to clear vane 56 and extends into the interior of the printer. Arm 63 is engaged by a tension spring 64 to bias vane 61 into extreme counterclockwise position in which position as previously stated lug 54 is presented in blocking relation to the pull bar 18 associated with type bar 51. Arm 63 serves as the armature for an electromagnet 66 which when energized attracts arm 63 and thus rocks vane 61 to its extreme clockwise position thus shifting lug 54 out of alignment with the pull bar 18 associated with special type bar 51.

A latch member 67 for latching the armature arm 63 in attracted position is pivoted at 68 and is provided at its lower end with laterally extending projection 69 which is held in engagement with the free end of arm 63 by tension spring 71 when vane 61 is in extreme counterclockwise position and which moves beneath the inner end of arm 63 when vane 61 is rocked to extreme clockwise position due to the attraction of arm 63 by electromagnet 66. The purpose of latch 67 is to hold arm 63 in attracted position after magnet 66 has become deenergized.

At its upper end latch 67 is provided with a laterally extending projection 72 the free end of which is disposed in the operating path of the front (right-hand as viewed in Figs. 1 and 2) blade 31 of operating bail 24. The relation of projection 72 of latch 67 to operating bail 24 is such that the foremost blade 31 thereof shall engage projection 72, whether bail 24 rocks through the full clockwise stroke for printing or the limited stroke permitted by a selected function lever 23 and impart sufficient clockwise rotation to latch 67 to release arm 63 of vane 61 which is restored to extreme counterclockwise position by spring 64. This latch 67 will be operated to release lever arm 63 upon every stroke of bail 24, whether full or partial.

Referring again to Fig. 1 and particularly to the right-hand portion thereof, the reference numeral 76 indicates generally a signal transmitting distributor mechanism which is supported on the keyboard base of the printing telegraph apparatus at the front thereof and which may be similar to the transmitter mechanism shown in Patent 1,595,472, granted August 10, 1926, to H. L. Krum. The transmitting mechanism 76 has a plurality of sets of transmitting contacts 77 each set of which is controlled by a transmitting contact lever 78. The transmitting contact lev-

ers are controlled jointly by permutation code bars (not shown) and timing cams (also not shown), there being a permutation code bar and a cam individual to each of the levers 78. The transmitting cams are carried by a rotatable shaft 79 which is driven through a single revolution clutch from the same motor or other source of power which drives main shaft 30.

For controlling electromagnet 66, the transmitting cam shaft 79 has secured thereto, a cam 81 (Figs. 1 and 3) which is engaged by a cam follower 82 carried by a contact tongue. Contact tongue 83 is engageable with a contact tongue 84 to close an energizing circuit for electromagnet 66. Cam 81 is provided with a single indentation which is presented to the follower 82 when shaft 79 is at rest. When shaft 79 is released for rotation to transmit a signal combination, cam 81 closes the circuit for magnet 66 by moving contact tongue 83 into engagement with tongue 84. Armature arm 63 is thus attracted by magnet 66 and becomes held in attracted position by latch 67. At the end of the single revolution cycle of shaft 79, cam follower 82 enters the indentation in the periphery of cam 81 and tongue 83 becomes disengaged from tongue 84. Magnet 66 becomes deenergized but armature arm 63 is not affected, as it is held by latch 67.

The signals generated by the transmitting contacts 77 are applied to the single magnet selector mechanism of the printer in the same manner as received signal combinations and control the operation of the type bars and function levers in the same manner. However, the magnet 66 is not energized in response to signals received from a distant transmitter but is energized only for each cycle of the transmitting shaft 79 local to the printer. When the selection corresponding to the signals generated in the transmitting contacts 77 has been established in the vanes 22 and code bars 19, the operating bail 24 is released for clockwise motion and if the selection pertains to the printing of a character, bail 24 operates through a full stroke. However, if the selection pertains to a function it operates through a partial stroke before being blocked. In either case the front blade 31 of bail 24 trips latch 67 to permit armature arm 63 to be retracted by spring 64.

The blocking bar 53 has no effect upon any of the pull bars 18 and their type bars 17 except upon the pull bar which controls and operates special type bar 51. As previously stated this pull bar responds to the space signal combinations and accordingly the pull bar 18 associated with type bar 51 will be selected and a special character will be printed in each interword or other space in message material transmitted from the transmitting contacts 77 and recorded by the printer as a home record. The interword and other spaces in message material received from a distant transmitter will not contain the special character but will be true spaces. In this way message material transmitted from the contacts 77 can be distinguished from message material received from a remote transmitter.

The hereinbefore described system for distinguishing between transmitted and received message material involving the use of a special type bar to print a special symbol in response to space signal combinations locally generated is particularly advantageous for use in multiple copy printing of the message material involving the use of interleaved carbons. The special distinguishing character will appear on all carbon copies produced as well as on the original so that

any of the copies made will clearly indicate which portions of the message material were received from a remote transmitter and which were generated locally.

It should be understood that under some circumstances it may be desirable to provide for the printing of the special character in response to the space signal combination received from a remote transmitter, leaving the spaces in message material generated locally as true spaces. This may be accomplished merely by changing the relation of the lug 54 on blocking bar 53 to the pull bar 18 associated with special type bar 51 so that the pull bar is normally unblocked and is moved by the electromagnet 66 upon the energization thereof in response to the operation of the transmitting shaft 79 into blocking relation to the pull bar 18 associated with type bar 51.

Although a specific embodiment of the invention has been shown in the drawing and described in the foregoing specification, it is to be understood that the invention is not limited to such specific embodiment but is capable of modification and rearrangement without departing from the spirit of the invention and within the scope of the appended claims.

What is claimed is:

1. In a printing telegraph apparatus, means for transmitting message representation signals, means for recording message material corresponding to transmitted and received signals, and means controlled by said transmitting means for operating said recording means for recording a special symbol at variable intervals throughout the body of message material to synchronize the operation of the transmitting means local to said recording means.
2. In a printing telegraph apparatus, means for transmitting message representation signals, means for recording message material corresponding to transmitted signals and message material corresponding to received signals, and means controlled by said transmitting means for operating said recording means for recording a special symbol at variable intervals throughout the body of one or the other of the two kinds of message material to indicate the operation of said transmitting means.
3. In a printing telegraph apparatus, a signal transmitting mechanism, a signal receiving mechanism, a printing mechanism including a plurality of printing elements, a selectable element associated with each printing element, means controlled by said signal receiving mechanism for selecting said selectable elements, and means controlled by said transmitting mechanism for blocking the selection of one of said selectable elements to control the printing of a character by the printing element associated with said one selectable element according to the operation or non-operation of said transmitting mechanism.
4. In a printing telegraph apparatus, a signal transmitting mechanism, a signal receiving mechanism, a printing mechanism including a plurality of printing elements, a selectable element associated with each printing element, means controlled by said signal receiving mechanism for selecting said selectable elements, means controlled by said transmitting mechanism for alternatively blocking and unblocking the selection of one of said selectable elements, means for latching the last mentioned means in one of its relations to said one selectable element, and means for releasing said latching means.
5. In a printing telegraph apparatus, a signal transmitting mechanism, a signal receiving mechanism, a printing mechanism including a printing bail and a plurality of printing elements, a selectable element associated with each printing element, means presentable in one of two positions for blocking one of said selectable elements and in the other of said two positions for unblocking said one selectable element, means for normally presenting said blocking and unblocking means in one position, means controlled by said transmitting mechanism for presenting said blocking and unblocking means in the other of said positions, and means releasable by said printing bail for latching said blocking and unblocking means in the position in which it is presented by said transmitting mechanism controlled means.
6. In a printing telegraph apparatus, a signal transmitting mechanism, a printing mechanism including a plurality of type bars, a plurality of associated selectable bars and a printing bail, signal controlled means for selecting said selectable bars individually, means presentable in one position for blocking one of said selectable bars and in another position for unblocking said one bar, means controlled by said transmitting mechanism for presenting said blocking and unblocking means in a particular position, means for latching said blocking and unblocking means in said particular position, and means associated with said printing bail for releasing said latching means.
7. A printing telegraph apparatus comprising means for distinguishing message material originating at different points on a telegraph line including a printing element, means to select said element in response to each character spacing element, means for blocking the operation of the printing element in response to signals originating at one point on said line, and means for precluding the blocking of said printing element in response to signals originating at another point on said line whereby said printing element is operated to record its operation and to distinguish message material originating through the operation of a transmitter.
8. In a multi-copy printing telegraph apparatus, a transmitter, a recording means for distinguishing between transmitted message material and received message material including means for impressing a characteristic upon all copies of the message material simultaneously produced in response to signals originating in a transmitter, and means for precluding the recording of said characteristic on each of said copies produced by the recording means in response to signals generated by other than said transmitter.
9. In a multi-copy printing telegraph apparatus, a transmitter, a recorder local thereto including means for recording a symbolic character upon all copies of message material simultaneously in response to the operation of said transmitter, and means for precluding the recording of said symbolic character when said recorder responds to signals generated by other than said transmitter.
10. In a printing telegraph apparatus, a transmitting mechanism operable in cycles, a selecting mechanism responsive to signals generated by said transmitting mechanism, a plurality of character printing elements selectable individually by said selecting mechanism, means for

normally blocking one of said character printing elements without blocking remaining printing elements, and means controlled by said transmitting mechanism in each cyclic operation thereof for retracting said blocking means to unblocking position.

11. In a printing telegraph apparatus, a transmitting mechanism, a selecting mechanism responsive to signals generated by said transmitting mechanism, a plurality of character printing elements selectable individually by said selecting mechanism, means for normally blocking one of said character printing elements, means controlled by said transmitting mechanism for retracting said blocking means to unblocking position, means for latching said blocking means in retracted position, and means for releasing said latching means.

12. In a printing telegraph apparatus, a transmitting mechanism, a selecting mechanism responsive to signals generated by said transmitting mechanism, a plurality of character printing elements selectable individually by said selecting mechanism, means for normally blocking the selection of one of said printing elements without blocking remaining printing elements, and means controlled by said transmitting mechanism for retracting said blocking means to unblocking position.

13. In a printing telegraph apparatus, a transmitting mechanism, a selecting mechanism responsive to signals generated by said transmitting mechanism, a plurality of character printing elements selectable individually by said selecting mechanism, means presentable in either of two positions for blocking and unblocking one of said printing elements and normally occupying a particular one of said two positions, and means controlled by said transmitting mechanism for shifting the last mentioned means to the other position.

14. In a printing telegraph apparatus, a transmitting mechanism, a selecting mechanism responsive to signals generated by said transmit-

ting mechanism, a plurality of character printing elements selectable individually by said selecting mechanism, means for normally blocking the selection of one of said printing elements, an electromagnet for shifting said blocking means to unblocking position, and means actuated by said transmitting mechanism for completing the energizing circuit for said electromagnet.

15. In a printing telegraph apparatus, a transmitting mechanism, a selecting mechanism responsive to signals generated by said transmitting mechanism, a plurality of character printing elements selectable individually by said selecting mechanism, means for normally blocking the selection of one of said printing elements, a printing bail for operating said printing elements upon selection, means controlled by said transmitting mechanism for retracting said blocking means to unblocking position, means for latching said blocking means in retracted position, and means associated with said printing bail for releasing said latching means.

16. In a printing telegraph apparatus, a transmitting mechanism, a selecting mechanism responsive to signals generated by said transmitting mechanism, a plurality of character printing elements selectable individually by said selecting mechanism, means for normally blocking the selection of one of said printing elements, a printing bail for operating said printing elements upon selection, function selecting means, means controlled by said function selecting means for restricting the stroke of said printing bail, means controlled by said transmitting mechanism for retracting said blocking means to unblocking position, means for latching said blocking means in retracted position, and means associated with said printing bail for releasing said latch in the full or restricted stroke of said bail.

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CERTIFICATE OF CORRECTION.

Patent No. 2,293,093.

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It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 4, first column, line 36, for "synchronize" read --symbolize--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 29th day of September, A. D. 1942.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.