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H. DEIMLING ETAL

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TELEGRAPH APPARATUS HAVING INTERMEDIATE STORAGE CAPABILITY

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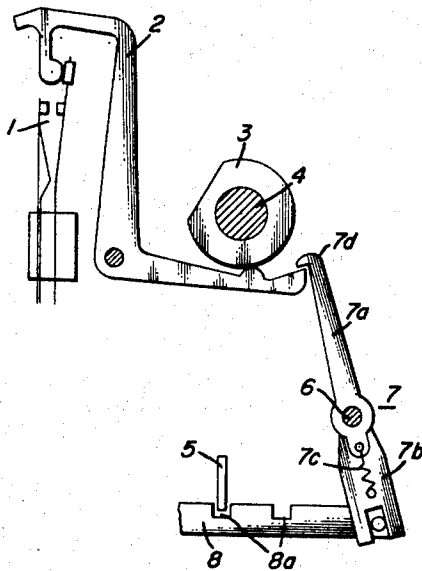


FIG. 1

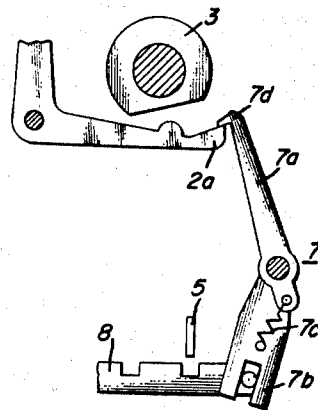


FIG. 1a

FIG. 2

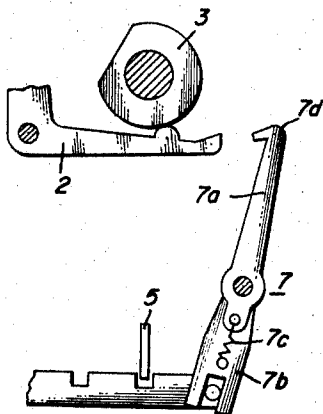
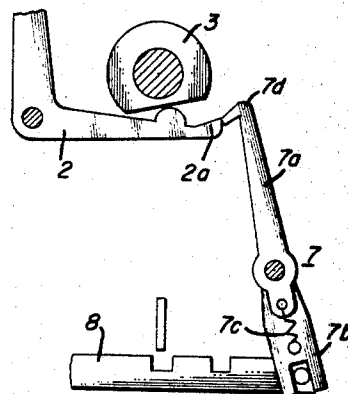


FIG. 2a



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TELEGRAPH APPARATUS HAVING INTER-MEDIATE STORAGE CAPABILITY

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3 Claims

ABSTRACT OF THE DISCLOSURE

A telegraph transmitter arrangement for permitting an operator to key-in two successive characteristics at an input rate which is higher than the equipment transmission rate by means of an intermediate storage. The locking of the keyboard, which would normally prevent such an occurrence, is eliminated upon transmission of the penultimate code element of the first character. There is provided in accordance therewith the intermediate storing of the last code element of the premature following character in the associated pull lever, while the last code element of the first character is simultaneously retained therein awaiting transmission.

The present invention relates to key-controlled transmitters operating on the start-stop principle, for use in connection with printing telegraph apparatus (teleprinters), or the like, comprising an arrangement by which there is permitted momentarily an input rhythm which is in excess of the transmission rhythm.

It is known that the operating speed of 50 to 75 bauds of conventional teleprinter apparatus can be easily exceeded, because experienced typists (operators) during favourable sequences of figures or letters can, for a short period of time, reach a higher operating speed than can be processed by the machine. Moreover, the generally conventional keyboard locking arrangement prevents two immediately successive characters from being superpositioned (overprinted).

Disadvantages are evident therefrom such as the restriction of the individual operating speed, as well as omissions caused by the temporary locking of the keyboard, and this makes the operation of a teleprinter difficult enough to require well-trained personnel.

It is the object of the present invention to avoid these disadvantages in that the transmitter is capable of absorbing or intercepting the momentarily appearing typing peaks, normally involving two characters, by a type of intermediate storage.

According to the invention this is accomplished in a simple manner in that the keyboard locking which is effective during the transmission of a keyed-in character, is eliminated upon transmission of the penultimate signal element, and in this way the mechanically, electromechanically, or electronically preset condition of the last signal element is maintained for the period of time required for the transmission of this last signal element. This is also the case in an intermediate storing-in of a new code combination.

The invention will now be explained in detail with reference to the accompanying drawing in which:

FIGS. 1, 1a, and 2, 2a show, in schematic representation restricted to the most essential parts, that particular portion of the transmitter associated with the last signal element of a multicontact transmitter of a known type, being mechanically influenced by the key-controlled code bars.

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The transmitting arrangement shown in FIGS. 1, 1a, and 2, 2a, provides, for each signal element according to the representation, a transmitting contact 1, a sensing lever 2, and a controlling cam plate 3 which together constitute the transmitting cam shaft which is driven by the transmitter shaft 4. In addition thereto this includes a control cam (not shown) for producing the synchronizing pulses commonly referred to as the start-stop elements. Moreover, the transmitting cam shaft comprises a further, cam plate (not shown) for effecting control of the keyboard locking in conformity with the cycles. In the present case this consists of a holding bar 5 arranged transversely over the code bars 8, and by which the code bars 8 are retained in the one or the other final position, by engagement to the grooves 8a, for a predetermined period of time in the assumed position. Before, this period of locking or holding usually lasted from the end of the start element to the beginning of the stop element. In this way it was safeguarded that the setting of pull levers 7 (operating levers) as actuated by the code bars 8 was maintained in the intended position during the time of transmission of the signal elements. During this time, therefore, it was impossible to reactuate the keys, so that in any case the complete transmission of a signal combination was required, before the keyboard could be released for a new keying-in.

However, according to the present invention it is now possible to key-in two successively following characters within a time which is shorter than the transmission requirements. The pull lever 7 associated with the last signal element, and in accordance with the schematic representation, consists of an upper operating lever portion 7a and a lower fork part 7b, which are both pivoted on shaft 6 common to all of the operating levers 7. The two lever portions 7a and 7b are connected to one another by a spring 7c, so that in the normal condition, they will assume the stretched-out position as illustrated in FIGS. 1, 2, and 2a. Moreover, the cam plate (not shown) associated with the holding bar 5, is designed in such a way that the blocking of the keyboard is already eliminated immediately after the transmission of the penultimate signal element.

With reference to the accompanying drawings it will now be explained in detail how the premature input of a new signal is permitted and accepted.

From the condition as shown in FIG. 1, which is retained by the transmitter until transmitting the penultimate signal element, the code bars 8 are released by the holding bar 5 so as to permit new setting thereof, corresponding to the next character to be transmitted upon beginning the transmission of the last signal element. Shortly before that, and according to FIG. 1a, due to the sensing operation (travel) of the sensing levers 2 which have been released by the associated control cam plate 3, the snugs 2a and 7d are caused to engage one another. During the subsequent resetting of the code bar, according to FIG. 1a associated with the last signal element, and due to a new keying-in, the fork portion 7b of pull lever 7, under the action of the spring 7c, is swivelled with respect to the upper operating lever portion 7a which is retained by the sensing lever 2. The tension of the spring 7c is chosen so that it will neither have an influence upon the engaging position between the levers 2 and 7a, nor will it be capable of retracting the code bar 8 out of the newly set position. In this way the old, as well as the newly selected condition, will be retained until, by the completed transmission of the last signal element, the upper operating lever portion 7a is again released by the sensing lever 2 which has been lifted again by the action of the cam plate 3, so that the operating lever portion 7a, due to spring 7c, will jump into the stretched-out position as shown in FIG. 2.

Upon commencement of the immediately following transmission cycle, the keyboard is again locked by the holding bar 5 in the manner as already described hereinbefore until the transmission of penultimate signal element is effected. If, within the stroke of an immediately following new keying-in, there is again effected a resetting or displacement of the code bar 8 according to FIG. 2a as associated with the last signal element then, in this particular case, the operating lever portion 7a with its snug 7d is placed against the snug 2a of the sensing lever 2 which has already engaged at this time position. Only if the latter, after the completed transmission of the last signal element, is lifted out again by the cam plate 3, the operating lever portion 7a is permitted to assume the position corresponding to the newly keyed-in character (signal element).

By this type of intermediate storing within the range of the last signal element there is enabled a maximum shortening of the input rhythm of two successively following signal combinations of about one and a half signal elements. A further reduction, of course, can be achieved by having the operating lever associated with the penultimate signal element designed in accordance with the present invention, and effecting a premature release of the keyboard in accordance therewith.

With the enlargement of the input clearance or tolerance compulsorily resulting from the premature release of the keyboard it is possible, in the event of a very rapid input rhythm, as is the case e.g. with the so-called legatotyping, that two characters can be keyed-in within the extended range of release, before the keyboard is relocked with the newly starting transmission cycle. In consequence of this it will happen that only the second one of the two characters will be transmitted.

In order to eliminate fundamentally such a skipping of characters, care will have to be taken that within the release range only one single character can be fed in for the intermediate storing. This is possible, for example, with the aid of an additional keyboard locking which is controllable in dependence upon both the transmitter condition and the storing-in, and which is cancelled again with the beginning of the transmission of the corresponding character.

In the case of transmitters employing preliminary contacts which are set directly by the code bars, and which are interrogated with the aid of a transmission distributor, the idea of the invention may be employed in such a way that the code bar associated with the last signal element, and via the preliminary contact associated therewith is aimed at controlling a relay. The switching circuit of this relay is so designed that this circuit, by a corresponding contact control on the part of the transmission distributor is interrupted each time during the transmission period of the last signal element until to the end of the stop element as a maximum. Moreover, this relay comprises a hold circuit which is each time momentarily interrupted at the beginning of each cycle of the transmission distributor, i.e. during the start element. In the course of this, a further delay contact takes over the function of the preliminary contact to be controlled.

With the aid of this arrangement it is possible to store the signal element condition as keyed-in via the code bar setting, via the hold circuit, for the required period of time, whereas by interrupting the control circuit during the time of the premature resetting of the code bars there is prevented a possible influence upon the momentary condition of the relay. No sooner than after the starting of the transmission distributor for transmitting a new character, the hold circuit is momentarily interrupted, thus

erasing or cancelling the previous condition, and safeguarding a storing corresponding to the newly keyed-in character.

The idea of the present invention may also be applied to transmitters having a purely electronic mode of operation, and in which the individual signal conditions are keyed into storage stages. In arrangements of this kind it is merely necessary to replace the storage stage associated with the last signal element, by a two-stage shift register, which is being stepped on each time during the start element or, at the latest, at the end of the transmission of the penultimate signal element. In this way it is safeguarded that the condition of the last signal element of the combination which is just being transmitted, is each time ready for being evaluated, whereas by the released first stage of the shift register there is enabled an intermediate storing-in of the last signal element of the subsequently following signal combination.

What is claimed is:

1. An improved key-controlled telegraph transmitter arrangement operating on the start-stop principle, in which there is momentarily permitted an input rhythm which is higher than the transmission rate, and in which each code element of an actuated key is established for transmission by the position assumed by a respective code bar (8), in response to said actuation, and by the subsequent sensing of that position by a respective sensing lever (2), wherein the improvement comprises a pull lever (7), in operative arrangement with the sensing lever (2), associated with the last signal code element, and coupled to the corresponding code bar (8), said pull lever (7), in response to a premature following input code signal and elimination of the keyboard locking subsequent to the transmission of the penultimate code element of the preceding signal, providing for an intermediate storage of the corresponding code element of the premature following signal while simultaneously retaining the code element of the preceding signal until that element is transmitted.

2. An arrangement according to claim 1 wherein said pull lever (7) is comprised of an upper operating lever portion (7a) and a lower fork portion (7b), said upper operating lever portion (7a) having a snug (7d) at the free end thereof designed to interact with the snug end (2a) of sensing lever (2).

3. An arrangement according to claim 2 wherein said upper portion (7a) and lower portion (7b) of said pull lever (7) are pivotably coupled by way of a shaft (6) and a spring (7c) so as to provide the retention of the preceding signal code element, until transmission thereof, by the interaction of the snug (7d) of the upper portion (7a) with the snug end (2a) of the sensing lever (2), while the signal code element of the premature following signal is being keyed-in and intermediately stored in the lower portion (7b).

References Cited

UNITED STATES PATENTS

1,367,735	2/1921	Dixon	178—17.5
1,902,943	3/1933	Bancroft	178—17.5
1,915,280	6/1933	Bancroft	178—17.5
2,336,197	12/1943	Spencer	178—17.5
2,623,118	12/1952	Salmon	178—17.5
2,678,965	5/1954	Ziffer et al.	178—17.5

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