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HOME RECORD CUT-OUT ASSEMBLY

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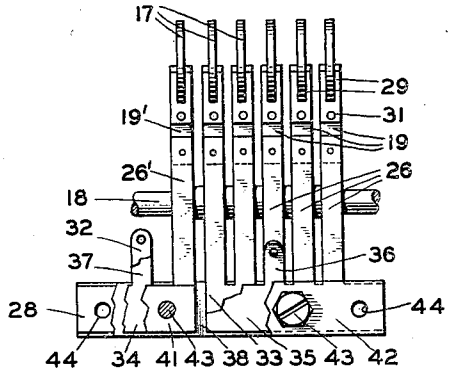


FIG. 2

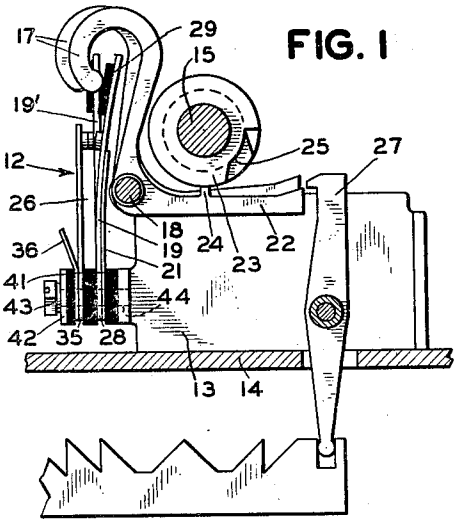


FIG. 1

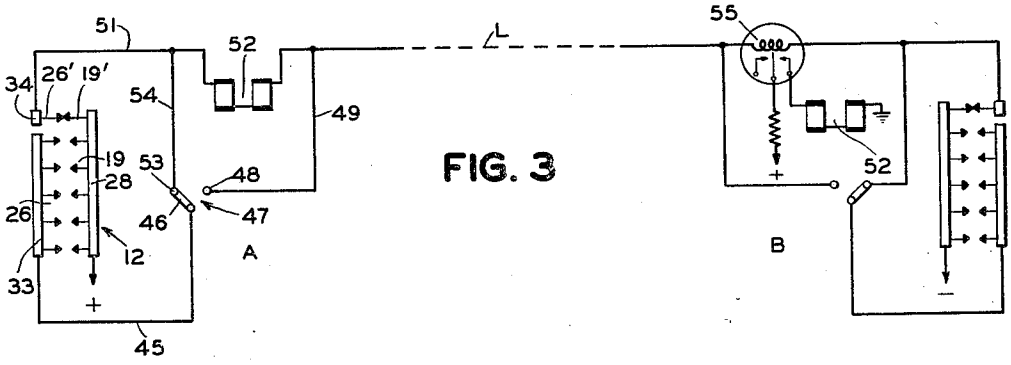


FIG. 3

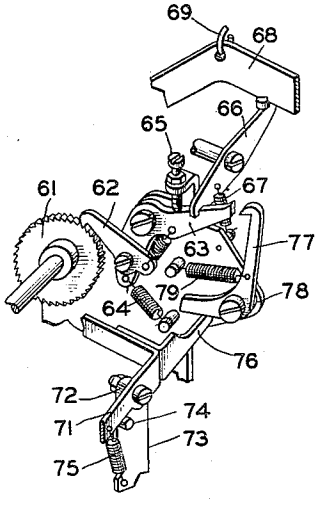


FIG. 4

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HOME RECORD CUT-OUT ASSEMBLY

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6 Claims. (Cl. 178—53.1)

This invention relates, in general, to telegraph printers, and has particular reference to an improved contact assembly for the same, whereby the home printer may be cut out of the line so as to be nonresponsive to outgoing transmission.

Present day automatic telegraph systems of the simplex or stop-start type usually include some means for providing a home record of outgoing messages. This is usually done by connecting the receiving printer in the line so as to record messages that are being transmitted from the home office over the line to a distant station. When transmission is not taking place, the same printer is ordinarily used to receive incoming messages.

Office equipment for a particular line, whether it be a local office, or subscriber, or a central office, usually comprises two units, a transmitting unit and a printing unit, and, as before mentioned, the printing unit may perform not only work of recording incoming messages, but also of providing the office with a copy of all outgoing messages.

It has been found, however, that the recording of a home-copy of sent messages, in a busy office, is an expensive operation requiring the use of a large amount of additional printer tape and in some classes of service is unnecessary. Hence, one of the objects of this invention is to provide automatic means for cutting the home printer out of the line whenever transmission is taking place, if desired.

Another object is to effect a substantial saving of printer tape by elimination of the home record.

A further object is to eliminate all records of outgoing tape so that there can be no confusion with incoming messages.

A still further object is to provide means for cutting out the printer, while transmission is taking place, without affecting its ability to automatically record incoming messages.

Another object is to provide a contact assembly for a printer, adapted to render the printer responsive to incoming signals and unresponsive to outgoing signals.

These and other objects are effected by this invention, as will be apparent from the following description and claims taken in connection with the accompanying drawing forming a part of this application, in which:

Figure 1 is a fragmentary view of a start-stop transmitting unit showing a side view of the contact assembly;

Figure 2 is an elevation view of the contact assembly;

Figure 3 is a circuit diagram showing the arrangement of the controlling units; and

Figure 4 is a fragmentary perspective view of a simplex printer showing the tape feed mechanism thereof.

In the well known simplex system, the transmitting unit employs a five-unit code to transmit the characters. This requires the use of either an electrical or mechanical distributor which is brought to rest at the end of each character combination, and restarted in phase with the succeeding character code combination. This requires, in addition to the character selecting impulses, additional "start" and "stop" impulses. The seven impulses, that is, the five impulses for the character selection and the two impulses for starting and stopping, are sent out through a contact assembly forming part of the transmitting apparatus. This contact assembly is well known and requires no description.

Fig. 1 shows a fragmentary view of a standard simplex transmitting unit of the type disclosed in Patent No. 1,796,378, granted March 17, 1931, to H. L. Krum, only such features of the machine being illustrated as are essential for a proper understanding of the present invention. A modified contact assembly, however, is associated therewith and is indicated generally at 12. The contacts are supported by a plate member 13 projecting upwardly from the base 14. The transmitting cam shaft is shown at 15 in its normal or stop position with all but the back spring contact held open by the contact levers 17, pivoted on the horizontal shaft 18. It will be observed that the contacts are suitably insulated from each other and from the mounting plate. The spring contact members 19 are provided with reinforcing spring strips 21 which serve to urge the contact levers in a counter-clockwise direction and keep the horizontal portion 22 of each contact lever 17 in constant engagement with the cams 23.

The horizontal arm 22 of each contact lever has a hump 24 thereon engaging the edge of its associated cam 23. Each cam has a depression 25 therein which, when opposite the hump 24, permits the lever 17 to rock in a counter-clockwise direction, thus allowing the spring contact 19 to close against its associated contact 26, provided it is not held against rotation by the locking latch 27. By permitting certain of the contacts to close and others to remain open, the desired character signal is formed. In addition to the contacts corresponding to each character impulse, there is an additional pair of contacts 19' and 26', shown in Fig. 2, the function of which

is to transmit a "start" and "stop" impulse preceding and following the signal combination.

Referring now to Fig. 2, a front elevation of the contact assembly is shown. It comprises six pairs of contacts, five pairs, 19 and 26, for character impulses, and one pair 19' and 26' for the "start" and "stop" impulses. The back, or spring, contacts 19 and 19' on all pairs are formed from the one conducting plate 28. The six upwardly projecting spring contact arms engage the inner curved portion of the contact levers 17 and are insulated therefrom by non-conducting strips 29, suitably affixed to the upper end of the contact arms, as by rivets 31. The left base portion of the contact member 28 is provided with a soldering lug 32, through which it is connected to positive battery. The forward row of contacts is divided into two contact plate members 33 and 34, plate member 33 having five upwardly projecting contact arms 26, and plate member 34 having one such contact arm 26'. Contact plate member 33 has adjacent thereto an electro-conducting spacing strip 35 provided with a soldering lug 36. Plate member 34 is provided with one contact arm 26' and a soldering lug 37, and is spaced away from plate 33 by the gap 38. Another insulating strip 41 and a front plate 42 complete the assembly which is held together by screws 43. The entire assembly is provided with screw holes 44 by which it may be secured to the upright plate member 13.

Referring now to Fig. 3, the circuit arrangement of the device will be described. The circuit comprises a local station A and a distant station B connected together by a line L. The transmitting contact assembly of the local transmitter is shown at 12 and it is to be assumed that the transmitter is at rest. In this condition, the "stop" spring contact 19' will be over against its associated contact 26', and the remaining five spring contact arms 19 will be held away from their associated contacts 26. Spring contacts 19 and 19' are all connected to marking or line battery through plate 28, and the split contacts 26 and 26' are connected through plates 33 and 34, respectively, to the line through the printer magnet coils. Contact plate 33 is connected through conductor 45 to the pivot arm 46 of the cut-out throw switch 47. The right contact button 48 of the switch is connected through conductor 49 directly to the line L. Contact plate 34, on which the start-stop contact is formed, is connected through conductor 51 to the local printer magnet 52, and through said magnet to the line L. The left contact button 53 of the cut-out switch 47 is connected through conductor 54 to conductor 51 at a point intermediate the start-stop contact and the printer magnet.

The operation of the transmitting mechanism will now be described. Referring for a moment to Fig. 1, as the cam shaft 15 is released, its rotation will cause spring contact 19' to open, thus transmitting a start impulse, and to cause the contact to be held open while the five spring contacts 19 are selectively actuated in accordance with the position of the locking latches 27. Thus, a character combination is formed and transmitted over the line. Referring again to Fig. 3, the pivot arm 46 of the manually operated switch 47 is shown engaging its left contact button 53. In this position the local record printer 52 is connected in the circuit so that it will record all outgoing messages. In the start-stop system the line is normally supplied with positive or marking potential, thus making a complete circuit from marking battery, through contact plate 28, contacts 19' and 26', through conductor 51 to printer magnet 52, through the printer magnet to the line L and over the line to ground. Thus the printer magnet is normally energized when the transmitter is at rest. As the transmitting cam shaft rotates, contacts 19' and 26' are opened, to transmit the start or spacing impulse, and remain open during the five following impulses. As is well known in the art, this start pulse causes the selecting shaft of the printer to be released for one revolution. The five selecting impulses are then sent through the printer magnet 52 in synchronism with the rotation of the selecting shaft over the following path: from marking battery through the contact plate 28, contacts 19, contacts 26, contact plate 33, and thence through conductor 45, switch arm 46, left contact button 53, conductors 54 and 51, and the winding of magnet 52 to the line L. After the fifth code impulse has been transmitted, the start-stop contacts will again close and send the stop or marking impulse to the line.

If it is desired to dispense with a home record, the switch arm 46 is operated to its right contact button 48. This is the cut-out position and the five character selecting impulses from contacts 26 will be shunted around the local printer by the switch arm 46 and transmitted directly to the line L. The start impulse, however, is not shunted around the printer magnet 52 and, hence, this impulse will cause the printer cam shaft 15 to release for one revolution for each character transmitted. Since the selected character impulses are shunted around the printer magnet 52, the latter will receive a long period of no current or spacing impulses. The effect on the printer, of sending five spacing impulses will be described hereinafter in connection with Fig. 4.

The cut-out switch does not affect the operation of the local printer on incoming signals provided the local transmitter is at rest, since there is a constant circuit from the line L through the printer magnet 52, over conductor 51 to contacts 26' and 19', and through contact plate 28 to battery. However, if the local keyboard is operated, the start-stop contacts 19'—26' are immediately opened and marking potential is immediately removed from said line circuit.

The circuit arrangement at distant station B of Fig. 3 is slightly modified to show that the contact arrangement can also be used to operate a line relay 55 which in turn is used to operate the printer magnet 52'.

Fig. 4 shows a fragmentary view of the letter space feed mechanism of a standard printer, such as that shown in the aforementioned Krum patent.

Since the operating cam shaft of the printer is released each time the start impulse is transmitted, means must be provided for suppressing the feed mechanism whenever the local printer is to be cut out on outgoing messages. The feed mechanism comprises a ratchet-wheel 61 engaged by a spring held feeding dog 62. Feeding dog 62 is pivoted on one arm of a bell crank lever 63 that is held by a spring 64 against an adjustable screw 65. The opposite arm of lever 63 extends beneath a second lever 66. A spring 67 holds this second lever in engagement with the printing bail 68 of the printer. During the printing operation, and as bail 68 is raised by its associated spring 69, spring 67, which is stronger than spring 64, shifts the levers 66 and 63, and moves the

feeding dog 62 backwardly over the teeth of ratchet-wheel 61. Then when lever arm 68 is returned to normal position, lever 66 is disengaged from lever 63 and spring 64 is then effective to restore lever 63 and the feeding dog 62 to normal, thus advancing the feed ratchet-wheel 61 one step.

The standard printer, however, usually is provided with one or more function bars, the purpose of which is to perform certain special functions such as operating the "letters" and "figures" shifts. Whenever any such function bar is operated, the letter space feed mechanism is automatically suppressed. For this purpose the printer is provided with a bail 71 beneath the projecting arms of which project lugs formed on the special function bars (not shown). The bail is pivoted at 72 on a bracket 73 and is held in normal position against a stop pin 74 by a spring 75. An extension 76 on the bail projects beneath a bell crank lever 77 that is pivoted on a bracket 78 and held in normal position, with its horizontal arm engaging the extension 76, by a spring 79. As stated, when the printing bail 68 is moved upwardly to operate either a type bar or a function bar, feeding dog carrier 63 is shifted against the tension of the spring 64 to move the feeding dog 62 backwardly over the teeth of ratchet 61. If a function bar is operated at this time, which occurs on the reception of a blank signal, bail 71 is also rocked in such direction as to permit lever 77 to be shifted by its spring 79 so that its upper hooked end engages and locks feeding dog lever 63 against return movement. Hence no feeding operation occurs upon the return movement of the lever arm 68. At the next printing operation, however, the outer end of the feeding dog lever 63 is depressed by lever 66, thus releasing the hooked end of lever 77 and permitting the latter to return to normal under the action of its associated spring providing the same or another function bar is not being operated at this time.

Thus when the printer control switch 47 is thrown so as to shunt the selecting pulses around the local printer, only blank signals are received by the latter. These blank signals, as stated above, select a function bar so as to prevent feed mechanisms of the printers from functioning.

It will be noted that the embodiment described provides a means for permitting the local printer to respond only to incoming signals or, if desired, to both incoming and outgoing signals. It is obvious, of course, that the principle herein set forth may be embodied in other mechanical structures, and therefore the construction shown is to be considered in an illustrative rather than a limiting sense.

What is claimed is:

1. In a start-stop telegraph system, a first station, a second station, a line circuit extending from said first station to said second station, a telegraph transmitting apparatus in said circuit at said first station, a printer in said circuit and normally responsive to both transmitted and received code impulses, a contact assembly in said transmitting apparatus comprising a start contact and a plurality of selecting impulse transmitting contacts, means for operating said start and selecting impulse transmitting contacts to transmit character code combinations over said line circuit, and means for rendering said printer unresponsive to said transmitted selecting impulses while maintaining it in condition to receive all incoming impulses from said second station said means comprising a circuit arrangement for shunting said transmitted selecting impulses around said printer directly to said line circuit.

2. In a start-stop telegraph system, a line circuit, a transmitting apparatus in said line for transmitting telegraphic impulses, a distant source of telegraphic impulses, a printer in said line normally responsive to both transmitted and received telegraphic impulses, and means for rendering said printer unresponsive to certain predetermined transmitted impulses, while at the same time, remaining responsive to all received impulses said means comprising a circuit arrangement for shunting said predetermined impulses around said printer directly to said line circuit.

3. In a start-stop telegraph system, a line circuit, a printer in said circuit, a transmitting apparatus operable to form telegraphic code impulses, means for transmitting certain of said impulses through said printer to said line, and means for shunting others of said impulses around said printer directly to the line.

4. In a start-stop telegraph system, a line circuit, a home source and a distant source of telegraphic impulses, a printer at said home source, said printer performing its function under the control of a start impulse followed by a plurality of character code impulses, means for rendering said printer responsive to all impulses from said distant source whenever said home source is inactive and means for rendering said printer responsive to the start impulse but unresponsive to the character code combination of impulses from said home source.

5. In a start-stop telegraph system, a line circuit, a local source and a distant source of telegraphic impulses, a local printer in said circuit adapted to record incoming and outgoing character code combinations, said combinations comprising a start impulse, a plurality of predetermined code impulses, and a stop impulse, a transmitting apparatus associated with said printer at said local source including a contact assembly consisting of a start-stop contact, a plurality of transmitting contacts insulated therefrom and means for successively and selectively operating said contacts to form character code combinations, means for maintaining said printer responsive to all incoming signals whenever said local source is inactive, and means, comprising a switch in said circuit, for rendering said printer unresponsive to the code impulses of outgoing messages.

6. In a start-stop telegraph system, a line circuit, a recorder in said circuit, a transmitter including a start contact connected to the line through said recorder and a series of code contacts insulated from said start contact and means for connecting said code contacts to said line either through said recorder or directly to said line independently of said recorder.

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