

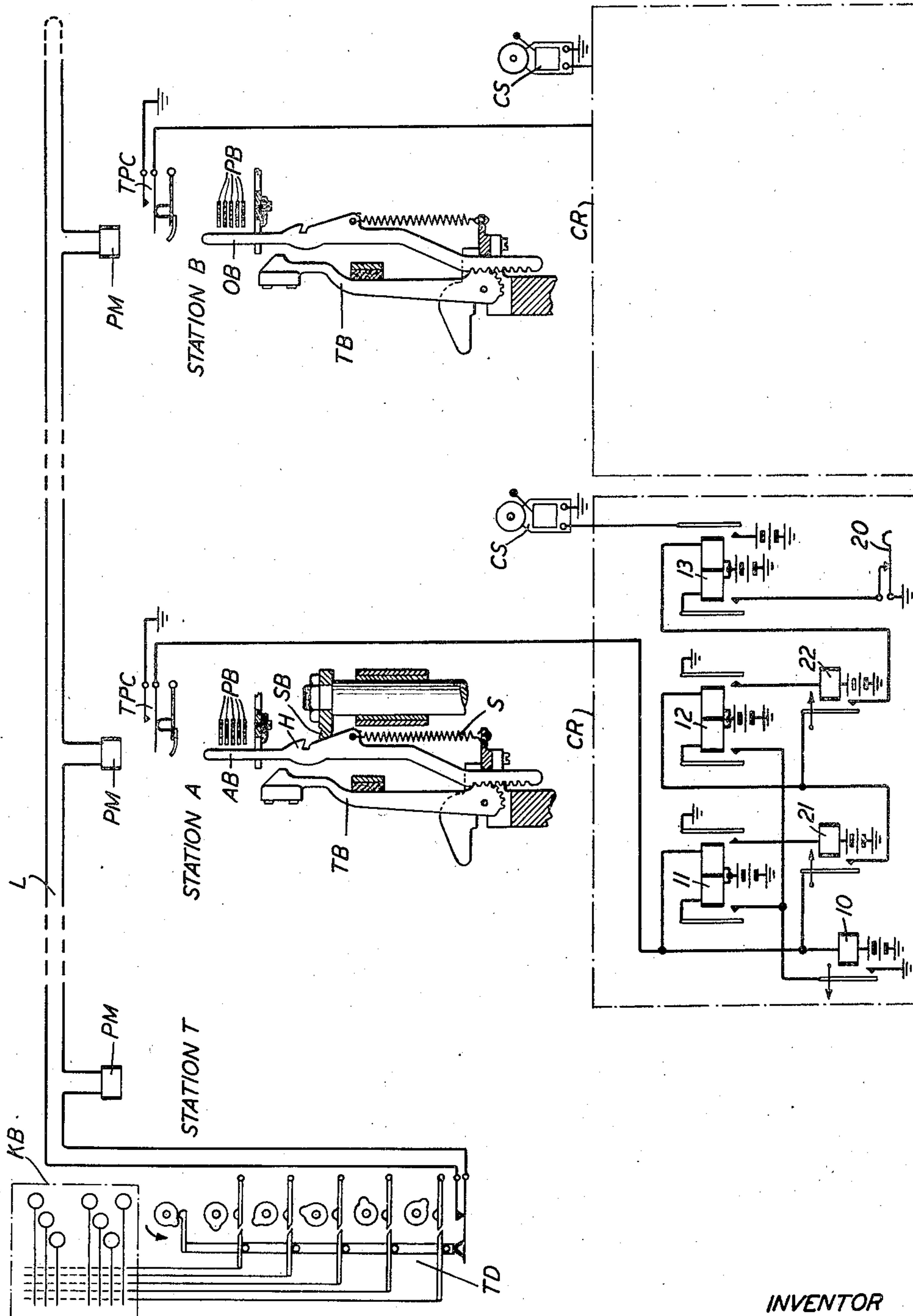
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SYSTEM FOR SELECTIVE CALLING OF TELEGRAPH STATIONS

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SYSTEM FOR SELECTIVE CALLING OF
TELEGRAPH STATIONS

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This invention relates to telegraphy and particularly to arrangements for selective calling of printing telegraph stations over a line circuit.

5 The invention relates particularly to systems of this type in which a plurality of stations are permanently connected to a line, each station being equipped with a telegraph printer for reception of messages; the messages may be transmitted from a calling station at a main office by means of an impulse transmitter or any number of the stations may be provided with an impulse transmitter for calling any of the other stations. The impulse transmitter may be in the form of a keyboard transmitting signals in the five-unit or six-unit code; the printers may be tape or page printers of the type-wheel or type-bar design, having elemental character mechanisms selectable individually by the different code combinations of impulses incoming from the line. The invention is applicable to teletypewriter systems or to telegraphic order-wire systems such as used in connection with telephotograph service in which systems it is desirable to provide simple and quick means for calling any one of the stations interconnected by the line circuit.

It is an object of the invention to provide a simplified calling arrangement in systems of this type.

It is a further object to reduce the time required for calling a station.

35 In accordance with one feature of the invention the printer at any one station is provided with a contact arrangement which is operated by the mechanism associated with the individual types for the selective operation thereof, and will be operated by that mechanism upon the reception of certain series of character codes particularly assigned for the calling of the stations; the contact arrangement, when operated, closes the circuit for a signaling device or for any other equipment which may be provided for placing the station in a called condition.

45 In accordance with a more specific feature of the invention the printer is operated to print three times in succession a certain letter, assigned for the calling of the station, and by the operation of the mechanism controlling the type operates contacting means associated with that mechanism for advancing a counting device three times, the counting device thereby closing the aforementioned circuit for the alarm. In accordance with a further feature of the invention a timing device is provided for prevent-

ing the operation of the alarm circuit when the sequence of reception of the called letter is interrupted, as by an intervening reception of a spacing signal or another character signal.

The preferred form of the invention may be applied to a telegraph line interconnecting a plurality of teletypewriter stations, the traffic of the line being sufficiently heavy to make it economical to run the printer motors continuously. For calling purposes a call letter is assigned to each station. For the calling of a station the keyboard is operated to transmit the call letter three times in succession; this feature takes advantage of the fact that in the transmission of messages ordinary characters will not be transmitted three times in immediate succession. In response to the operation of the keyboard all the receiving stations on the line will print the letter three times; however only the station to which the letter is assigned will have a set of contacts associated with the type operating mechanism for that letter, which consequently closes a circuit three times for a set of counting relays, of any well known arrangement, operating them in three successive stages to close in the last stage a circuit for an alarm or indicator, which serves to call the attendant at the station. Immediately upon the sending of the three call letters the message may be transmitted and recorded.

For the purpose of differentiating between the reception of the call letters in immediate succession and the reception of the call letters in a message, in which the letters would be separated by one or more other characters, a slow release relay, or any other known timing device, is provided to establish a holding circuit for the counting relays; this relay is timed to maintain the holding circuit long enough to bridge the normal time intervals between successive operations of the type mechanism for the call letters but not long enough to hold over the time of an intervening operation of some other type mechanism. In this manner the call signal is not operated except when the call letters are transmitted in immediate succession.

An advantage of the invention resides in the elimination of special calling apparatus, such as dials and automatic switches responsive to dialing pulses; another advantage is found in the saving of time over the dialing system, particularly where many short messages are transmitted to the different stations, as in the case of an order-wire system; it is a further advantage that

the system in accordance with the invention provides for the recording of the call letters.

It is within the scope of the invention to extend the selectivity of the system by the combination of different call letters for any one station or by increasing the number of call letters beyond three. It is also within the scope of the invention to use any known type of counting device other than a series of counting relays. The invention may be used in systems of the kind referred to above which are arranged for remote control of the printer motors.

The following is a more detailed description of a preferred form of the invention and should be read with reference to the attached drawing:

The system illustrated in the drawing comprises a transmitting station T having a transmitting keyboard KB connected through a transmitting distributor TD to a line L; a local printer may be associated with this station which in that case would have its printer magnet PM included in the line circuit. The keyboard KB and transmitting distributor TD are shown schematically in the drawing; for details of a device suitable for this purpose reference may be had to Patent 1,635,129 to C. L. Krum et al., issued on July 5, 1927.

The line circuit L extends through a plurality of receiving stations, such as stations A and B. Each of the receiving stations is provided with a printing device which has its printer magnet PM included in the line circuit for control of the printer in response to signals from station T.

The recording printers at the different stations may be of the type disclosed in Patent 1,745,633 to S. Morton et al., issued on February 4, 1930. Only enough details of this device have been shown in the drawing at stations A and B to facilitate an understanding of the invention. As shown in the drawing the type bar TB is geared to the actuating bar AB which, in turn, is placed in front of five permutation bars PB and tends to move into notches in the permutation bars under the influence of the spring S. A striker bar SB in its upward movement will admit the actuating bar AB into the notches if these have been brought into alignment by selective operation of the permutation bars; a hook H on the actuating bar AB will then engage the striker bar SB and will be carried upward therewith for the operation of the type bar to print the character thereon; when the notches in the permutation bars PB are not aligned with the actuation bar the hook H will be held out of the upward path of the striker bar SB and the type bar TB will not be operated.

Associated with each printer is a set of counting relays CR for operation of a call signal CS, which may be an audible signal device. The counting relay set comprises quick operating and releasing relays 11, 12 and 13, slow operating and quick releasing relays 21 and 22 quick operating and slow releasing relay 10; a restoring key 20 is also provided for stopping the call signal. The counting relay set and call signal are operated from contacts TPC associated with a type bar in the printer.

For the purpose of selective calling of the stations included in the line circuit a call letter is assigned to each station or group of stations; thus, station A may have the letter A and station B the letter B assigned for calling. The assignment is made by placing the operating member for the contact springs TPC in the path of the actuating bar AB of the type bar

which carries the assigned character; thus at station A the contacts TPC will be operated only when the character A is printed, whereas at station B the contacts TPC will be operated only when the character B is printed. It should be understood that the contacts TPC may be located at any convenient place relative to the mechanism individually associated with the assigned type bar.

The counting relay sets ES in the preferred arrangement shown in the drawing require the operation of contacts TPC three times in immediate succession for the operation of the call signal. Let it now be assumed that it be desired to send a message from transmitting station T to receiving station A. The operator at station T depresses the key A three times thereby controlling the transmitting distributor TD to send over the line three series of impulses each corresponding to the character A; these impulses will be received by all the printer magnets included in the line circuit. It should be understood that with certain transmitting equipments the key A may be depressed only once but for a sufficient time to allow the distributor to repeat the impulse series three times.

The first series of impulses corresponding to the letter A arriving at station A will operate the printer magnet PM to control the permutation bars PB so that the notches in these bars will be aligned for operation of the type bar of character A. Immediately upon selection the striker bar SB is automatically operated to raise the actuating bar AB and to close the contacts TPC; this operation will be repeated three times.

The first closure of contacts TPC extends ground to the counting relay set for operation of relays 10 and 11; relay 11 immediately locks over its left-hand contact at the armature of relay 10 and also extends ground at its right-hand contact to relay 21. Relay 21 is timed to operate a short time after contacts TPC have been opened by the return of actuating bar AB to its normal position. The relay 21 when it operates extends the ground circuit from contacts TPC to relay 12. Relay 10 is timed to not release until a short time after the second closure of contacts TPC and thus will maintain relays 11 and 21 energized during the normal intervals between closures.

At the second closure of contacts TPC ground is extended to relay 12 which operates and locks to ground at relay 10 and extends an operating ground to relay 22 which however, does not operate until a short time after the second opening of contacts TPC. At the second closure of contacts TPC the energization of relay 10 was repeated and the relay will not release until a short time after the third operation of contacts TPC. When relay 22 operates the impulse circuit from contacts TPC is extended to relay 13.

At the third operation of contacts TPC relay 13 is operated and locks to ground at restoring key 20 and also connects battery to the call signal CS which consequently is operated and will remain operated together with relay 13 until restoring key 20 is opened by the attendant.

Some time after the third opening of contacts TPC relay 10 releases thereby releasing relays 11, 12, 21 and 22. Relay 10 is timed so that it will maintain the locking ground for relays 11 and 12 during the opening of contacts TPC between operations of type bar A following in normal sequence but not to maintain

the locking ground over two or more intervals between operations of type bar A. By this provision the call signal will not be operated when the letter A is not repeated in immediate succession.

During the repeated transmission of the letter A all the printers in the line circuit will operate to print the letter A, but only those which have contact springs TPC associated with the actuating mechanism individual to the type bar A will have their call signal operated. It is, of course, understood that when station A receives any other character or receives character A less than three times in succession the call signal will not be operated. Thus ordinary messages may be transmitted over the line circuit without affecting any call circuits.

In accordance with the arrangements described above the call letters as well as the messages are recorded on all printers included in the line circuit, but only the station for which the message is particularly intended is put in called condition to attract the attention of the attendant.

What is claimed is:

1. A selective signaling system comprising a signal transmitter, a line circuit, a plurality of receiving stations connected by said line circuit to said transmitter for simultaneous operation, each of said stations including a receiving instrument having a plurality of operating elements individually selectable by different codes, a control circuit and a current source therefor, circuit closing contacts adapted to close said control circuit in response to the operation of a selected one of said elements, counting means operative in a plurality of successive stages and responsive to each closure of said control circuit to advance from one stage to the next, an operating device operatively associated with an advanced stage of said counting means to place said station in a called condition, the control circuits at said stations being connected to contacts responsive to dissimilar operating elements for the selective calling of individual stations in response to different impulse series from said transmitter.

2. A selective calling system comprising an impulse transmitter, a plurality of receiving stations, a line for connecting said stations together and to said transmitter, a recording instrument at each of said stations having recording elements selectively operable in response to code impulses from said transmitter, circuit controlling means at the different stations operable by said recording elements, a register at each station selectively responsive to the operation of said circuit controlling means for operation through a plurality of successive stages to place the station in called condition, as by operating an alarm, when said register has been advanced to a predetermined stage, and connecting means at said stations between said register and said recording elements adapted to operatively associate the registers with different predetermined recording elements at the different stations for the selective calling of individual stations in response to different impulse series from said transmitter.

3. A selective calling system for telegraph lines comprising a keyboard transmitter, a plu-

ality of receiving stations interconnected by a line from said transmitter, a recording printer at each of said stations having type controlling mechanisms selectively operable in response to character codes from said transmitter, circuit closing means at the different stations controlled by said type bar mechanisms for operation at any one station in response to a character code assigned for that station, step-by-step counting means at each station connected to said circuit closing means for advancing said counting means in response to repeated operations of said circuit controlling means, an operating device at each station responsive to the advance of said counting means a predetermined number of steps to place in called condition the station for which the code is assigned and a timing device for restoring said counting means when a step-wise advance of said counting means is delayed beyond a predetermined time.

4. A selective calling system for a communication line comprising a keyboard transmitter, a plurality of receiving stations interconnected by said line from said transmitter, a recording printer at each of said stations having type mechanisms selectively operable in response to character codes from said transmitter, circuit closing means at each of said stations operatively associated with a type bar mechanism in said printer responsive to a character code assigned for the calling of the station, step-by-step counting means controlled by said circuit closing means to be advanced a step for each reception of the assigned character code, a signal device responsive to the advance of said counting means a predetermined number of steps, and a timing device connected to be operated by said circuit closing means and having a predetermined period of release for restoring said counting means when a period between operations of said circuit closing means exceeds said period of release, as by the intervention of an unassigned code.

5. A telegraph receiving station comprising a recording printer having type bar mechanisms selectively operable in response to incoming character code impulses, contacting means controlled by the operation of one of said mechanisms corresponding to a character code assigned for the calling of said station, step-by-step counting means connected to said contacting means and adapted to be advanced one step for each operation of said one mechanism, a signal device connected to said counting means to be operated upon the reception at least three times of said assigned character code, and slow release relay means connected for operation once for each operation by said one mechanism to hold said counting means in advanced condition when said one mechanism is operated at regular printing intervals and timed to release when said one mechanism fails to operate during one printing interval.

6. A telegraph receiving station in accordance with claim 5 in which said counting means comprises groups of relays in a chain circuit extendable from one group to the next by the operation of a group in response to an operation of said one mechanism, the first of said groups including a slow operating relay.

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