Feb. 28, 1939. A. S. BENJAMIN 2,148,430

TELEGRAPH SELECTION SYSTEM

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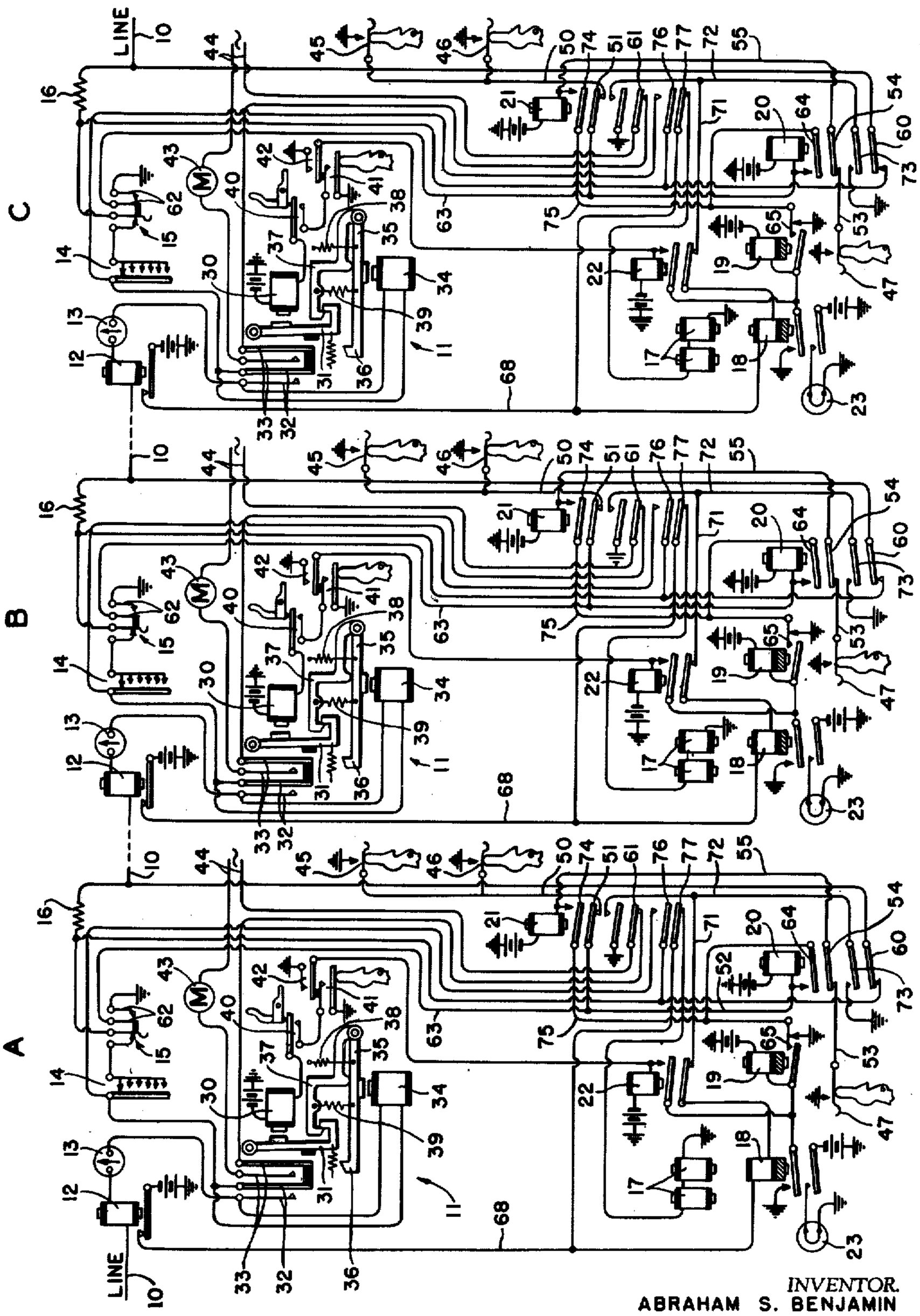

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TELEGRAPH SELECTION SYSTEM

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22 Claims. (Cl. 178—2)

The present invention pertains to telegraphic communication systems and more particularly to telegraph systems involving a plurality of stations arranged with instrumentalities for their selective interconnection for the purpose of telegraphic communication.

An object of the invention is the provision of a simple and reliable mechanism to enable any station of a telegraph system to select another station or a group of stations with which it is desired to communicate.

A further object is to enable an originating station, after selecting a desired station or stations, to establish a condition by which all other stations of the system are prevented from interrupting the established communication.

Features of the invention reside in the provision of means to manifest prominently at all times the communicative or idle condition of the line circuit, to enable an operator at an originating station to observe the progress of the acts, step by step, of setting up and subsequently disrupting a communicative connection, to determine the number of stations connected in communication, and to minimize noise at a non-communicating station upon the operating line circuit.

The above enumerated and other objects are attained by utilizing a plurality of printing telegraph sets of any desired type, each having as parts thereof a motor driven printer-selector, a driving motor therefor, and motor control means for starting and stopping the motor at a station by control from another station, to which relays and signals at each station are included to effect the method of operation according to the present invention; namely, that an operator at one station may start all motors to drive all selectors, then by the printer selector may indicate a desired station or more than one for communication, then may stop motors and/or otherwise disqualify non-indicated stations and may communicate with the indicated station or stations exclusively.

A more complete understanding of the invention will be obtained from the following description, taken in connection with the accompanying drawing, in which three stations are illustrated connected upon a communication line 10 which is presumed to serve the three stations shown, as well as additional stations.

In the drawing, three stations are illustrated at A, B, and C, the letter of each station indicating its individual call signal.

At each station is provided a motor control arrangement 11 according to the disclosure of Patent 1,964,268 issued to Oscar Morgenstern, together with the further items of line relay 12, milliammeter 13, keyboard transmitter 14, manual break key 15, series line resistance 16, receiving selector magnet 17 of the printer, holding relay 18, auxiliary holding relay 19, selection register relay 20, disabling or lockout relay 21, restoring relay 22, and busy lamp 23. In the motor control device 11, a resetting magnet 30 controls its armature 31 and two sets of contact members 32 and 33. A tripping magnet 34 has an armature 35 with latch tooth 36 for latching armature 31 in an intermediate position and has also a pivoted latch 37 for latching armature 31 in its attracted position. Spring 38 urges armature 35 away from magnet 34, while spring 39 draws latch 37 toward armature 35. A pair of contact members 40 normally separated are caused to engage each other in continuing manner by the case shift mechanism of the associated printer, and a pair of contact members 41 normally separated engage each other momentarily by selective action similar to that of selecting a character for printing, as disclosed in detail in the Morgenstern patent. An additional pair of contacts 42 also are closed momentarily by the character selection functioning of the printer selector. Contact members 32, when in engagement, short circuit the winding of magnet 34 which at other times is included in the line circuit 10. Contact members 33, when brought into engagement, close a circuit for operating a driving motor 43 by power from the indicated source 44.

In the relay equipment, a slow-to-release relay 18 for holding or maintaining a communication condition may be energized during operation of the station apparatus from the front contact of line relay 12, and because of its slow releasing function, it does not respond to telegraphic communication signals which cause rapid operation of the armature relay 12. Auxiliary holding relay 19 also is slow to release its armature and is energized directly by contact of slow relay 18. The station selector is provided further with three sets of selectively operable momentary contact devices similar to contact members 42; namely, contact device 45 which is closed by the selector apparatus when the individual station calling code signal is received, contact device 46 which is closed by the selector apparatus when another calling code signal common to stations of a selective group or common to all stations is received, and lockout contact device 47 which is closed when a disabling or lockout code signal is received. Contact device 45 is connected by con-

ductor 50, back contact and armature 51 of relay 21, and conductor 52 to winding of relay 20 for operation of that relay. Contact device 46 is similarly connected. Contact device 47 is connected by conductor 53 through back contact and armature 54 of relay 20 and conductor 55 to winding of relay 21 for energization of relay 21 conditionally that relay 20 has not been operated. It will be seen that relay 20 may be operated by contact device 45 at one station or 46 at stations of a group, and when operated, will disable relay 21, and it will be seen that relay 21 may be operated by contact device 47 at all stations where relay 20 has not been operated.

In a normal idle line circuit 10, current flows at each station through winding of line relay 12, winding of milliammeter 13, winding trip magnet 34, contact members of transmitter 14, contacts of break key 15, and shunting back contact and armature 60 of relay 20 which shunts the line resistance 16. Deflection of the pointer of ammeter 13 is effected to a degree which indicates an idle line. Similar parts and instrumentalities at each station connected with line circuit 10 are indicated by the same reference character.

Operation of the system of the invention is as follows: Operator at station A, desiring to dispatch a message to station B, first starts all motors by operating break key 15 to open and then to close the line circuit 10, with the effect that the magnet 34 at each station will be deenergized and immediately thereafter reenergized. At each station, deenergization of magnet 34 permits spring 38 to draw armature 35 away from magnet 34 and thus to lift latch 37 from mechanical engagement with armature 31, at the same time lifting tooth 36 of armature 35 into the path of armature 31, thus permitting armature 31 to move latch 37 to tooth 36 through an angle not sufficient to operate any of the contact members controlled by armature 31.

Upon releasing break key 15 and reclosing line circuit 10, the reenergization of magnet 34 at each station attracts its armature 35 and draws tooth 36 away from armature 31, thus releasing armature 31 to operate fully and thereby to cause its contact members 32, 33 to engage together respectively. Contact members 32 engage to short circuit magnet 34, and contact members 33 engage to close a power supply circuit for motor 43 from one of the power conductors 44, through contact members 33, motor 43, and contact and armature 61 of relay 21 to the other of the power conductors 44, with the result that the motor 43 at each station will be operating. Short circuiting the winding of magnet 34 decreases the resistance of line circuit 10 and increases current through milliammeter 13, moving the pointer of the milliammeter to another position, thus notifying the operator at station A that motors have been started.

Break key 15 also has closed momentarily and reopened its contact members 62. The closure contact 62 completes an energizing circuit for relay 20 through conductors 63 and 52, energizing relay 20, which operates its armatures and forms a holding circuit through front contact and armature 64 and contact member 65 of relay 19 to ground. Operation of relay 20 at this time occurs at the originating station only, since only at that station is the break key 15 operated. Energized relay 20 now forms a circuit for energization of relay 18 from grounded battery, through armature and front contact of line relay 12, conductor 68, winding of relay 18, armature and back contact of relay 22, conductors 71, 72 and armature 73 of relay 20 and front contact to ground, energizing relay 18, which in turn energizes and operates relay 19 over an obvious circuit. By operation of relay 19, the make-before-break contact members of relay 19 transfer the holding circuit of relay 20 through front contact and armature of relay 19 to armature of relay 18 and through its now closed front contact to ground, thereafter removing ground from contact member 65 of relay 19. By operation of break key 15, the operator at station A has started all motors and has operated relays 20, 18, and then 19 at his own station and has produced an indication in the milliammeter accordingly.

Desiring to transmit a message only to station B, operator at station A now depresses key "B" of the keyboard transmitter 14 to transmit over line circuit 10 a code signal for "B," which results in printing "B" at all stations and at the station B also results in closing of individual station selecting contact device 45 by mechanical means illustrated in Fig. 1 of the Morgenstern patent of record, which energizes relay 20 at station B over a circuit including battery, winding of relay 20 at station B, conductor 52, armature 51 and back contact of relay 21, conductor 50, and contact device 45 to ground. As described in connection with operations at station A, relay 20 forms its holding circuit and energizes relay 18, then relay 19, at station B, and transfers its holding circuit to relay 18. Should operator at station A desire to transmit to a plurality of remote stations concurrently, further stations may be selected similarly, one by one, by individual code signals, before transmission of a lockout code signal to be described below. Alternately, all stations of a predetermined group may be selected simultaneously by a single code signal which will select and operate contact device 46. A group selection may include all stations on the line, if desired, or only a limited number of stations; namely, A and B, but not C.

Station selection individually and by groups, with subsequent lockout, station release, and motor stop, is accomplished by mechanism such as disclosed in patent to Morgenstern by providing in each printer selector five or more sets of contact devices 41, 42, 45, 46, 47, mechanically positioned to be operable by four or more selector pull bars or equivalent selector elements respectively, contact devices 41, 42 being operable by a single mechanical element. Mechanism for closing a contact by equivalent selector elements in a different type of receiving printer is illustrated in Morton et al. Patent No. 1,904,164, Fig. 27, code lever 481, arm 506, contact 498. Assume a selective signaling system for station selection and control in which A, B, C, and others identify code signals for selection of stations individually, X identifies a code signal for lockout operation, Y identifies a code signal for selection of a group of stations which may include all stations of the line, Z identifies station A and B as a group of two stations, and "shift, H" identifies code signals for stopping motors as explained in the patent to Morgenstern. At station A, the contact device 45 (constructed as 16 of Fig. 1 in patent to Morgenstern) is positioned to be operated by that pull bar (14 of Morgenstern), which effects printing of letter "A" in the printer and which responds to a code signal generated by operation of key "A" of the keyboard transmitter, and a similar contact device is positioned to be operated by

pull bar "Z" and connected to conductor 50. Similarly, contact device 45 of station B is positioned to be operated by the "B" pull bar in response to a code signal generated by operation of key "B" of the keyboard transmitter, and similar contact device is positioned to be operated by pull bar Z and connected to conductor 50. Contact device of station C is positioned to be operated by the "C" pull bar, and so on for all stations individually considered. Contact device 47 at every station is similarly positioned to be operated by that pull bar at every station, which effects printing of letter "X" in the printer and which responds to a code signal generated by operation of key "X" in any keyboard transmitter. Contact device 46 for group selection is provided at all stations and is positioned to be operated by that pull bar which effects printing of letter "Y" in the printer and which responds to a code signal generated by operation of key "Y" in any keyboard transmitter. Printing in response to the selection signals offers to a locked out station a legible record of the station or stations which have been selected. In an emergency, operator at station C, noting by lamp 23 that station C is locked out and noting by letters "BX" printed on the record medium that station B alone had been selected, and perhaps noting further by a motionless pointer in milliammeter 13 that the line is not actively in use for communication, may request over a different channel of communication the operator at station B to release the line.

Having selected and qualified the telegraphic apparatus at station B, the operator at station A now desires to lock station C and other stations on the circuit out of the communication circuit, and accordingly operates a predetermined key of transmitter 14, transmitting a lockout code signal which operates contact device 47 at all stations. At stations A and B and other selected and qualified stations there is no effect from the contact device 47 because conductor 53 extends only to back contact of armature 54 in relay 20 wherein armature 54 is in operated position and out of engagement with its back contact. At station C, however, and at every other unselected and unqualified station in line circuit 10, operation of the lockout contact device 47 closes a circuit for the energization of relay 21 through battery, winding of relay 21, conductor 55, armature 54 and back contact of unenergized relay 20, and contact device 47 to ground. Relay 21 at such stations operates its armatures and closes its holding circuit through battery, winding of relay 21, front contact of armature 74, conductor 75, contact member 65 and armature of operated relay 19, and armature and front contact of operated relay 18 to ground. By its armature 61 and back contact, disabling relay 21 interrupts the power circuit and stops motor 43 at all unqualified stations. By its armature 76 and front contact, relay 21 short circuits the line circuit contacts of both break key 15 and keyboard transmitter 14 so that neither station C nor any other unselected and unqualified station is able to open the line circuit 10 in any manner and therefore cannot interrupt the ensuing message nor cause it to be recorded by selector operating magnets 17 at any unselected station. By its armature 51 and back contact, relay 21 prevents contact devices 45 and 46 from the operation of the relay 20 should contact devices 45 and 46 be operated.

At station B relay 20, in response to station selection functioning under control of station A, disengaged its armature 60 from its back contact at the time of station selection, thereby opening the shunt of series line resistance 16 at station B and changing the resistance of the line circuit 10, resulting in a small change in current in line circuit 10 and resulting in a corresponding small change in the indication of the pointer of milliammeter 13 at station A, as well as at all other stations. Operator at station A, having locked out all unselected stations, may note by the reading of the milliammeter 13 that only one station apparatus other than that at station A is included in the line circuit 10, and may proceed to transmit messages to the sole selected station B, whose apparatus is qualified to transmit in response.

Desiring to terminate the connection thus set up and to restore the line circuit 10 to its original condition of idleness, the operator at station A (or at any selected and operating station) may operate break key 15 for a period of time sufficient to release the armature of slow-to-release relay 18. Release of the armature of relay 18 will deenergize relays 21, 20, and 19 at all stations except relay 20 at station A or at the station where break key 15 is in operated condition, and will restore the shunt to line resistor 16 at all other stations which have been operating. Upon release of key 15, milliammeter 16 will return to that indication reached when all motors first were started by break key 15. Operated station A now transmits code signals "figures H" of which the code signal for "figures" causes an enduring engagement of contact members 40 and the code signal for "H" causes a transient engagement of contact member 41, thus closing transiently an obvious circuit for energization of magnet 30 which operates and restores its armature 31 and contact members 32, 33 at all stations and stops all motors 43. Contact members 33 stop all motors 43 and contact members 32 remove shunts from all magnets 34 at all stations, thus including magnets 34 in line circuit 10. Motor control operations for stopping all motors are here traversed briefly but are disclosed in detail in the patent to Morgenstern.

At the same time that contacts 41 are operated, there occurs a momentary operation of contact members 42 to close an obvious circuit for energization of restoring relay 22, which operates its armatures and forms a holding circuit from battery, through winding of relay 22, front contact and armature of relay 22, and armature and front contact of relay 18 to ground. Operation of relay 22 opens the energizing circuit of slow-to-release relay 18 which, after a short time, permits its armatures to assume normal position, thereby extinguishing signal lamp 23 and deenergizing relays 19 and 22 at all stations. Line circuit 10, together with all of its station apparatus, has been restored to normal condition of idleness, which fact will be indicated by the pointer of milliammeter 13.

While a busy or idle condition of the line will be indicated at all times by milliammeter 13, the signal lamp 23 also will indicate a busy line condition.

During the communication between and among selected stations, operation of relay 21 at all non-selected stations has caused its armature 77 to open the operating circuit of recorder magnets 17, so that the comparatively heavy armature of that magnet will remain motionless and

silent. At such a station the armature of line relay 12 is the sole moving element.

What is claimed is:

1. A method of operating a single-line multi-station telegraph system having normally inert motors and motor driven selectors responsive severally to signals transmitted to stations over said line, which includes the steps of transmitting signals for starting a plurality of motors at a plurality of stations, thereafter transmitting signals over the line to which some stations respond selectively, and thereafter transmitting further signals over the line effective at unresponded stations for stopping motors thereat.

2. A method of operating a multi-station telegraph system with normally inert motors and motor driven signal-responsive selectors, including the steps of transmitting a non-permutation signal for starting all motors, transmitting permutation signals for qualifying desired stations for communication, transmitting a permutation signal for stopping the motor at each unqualified station, transmitting a signal for restarting stopped motors, and transmitting a permutation code signal for stopping all motors.

3. A method of operating a single-line multi-station telegraph system having normally inert motors and motor driven selectors responsive severally to signals transmitted to stations over the line, which includes the steps of transmitting signals for starting a plurality of motors at a plurality of stations, thereafter transmitting signals over the line to which some stations respond selectively, thereafter transmitting further signals over the line effective at unresponded stations for stopping motors, transmitting communication signals among selectively responded stations, and restoring the system to initial condition.

4. A method of operating a multi-station telegraph system having selectors at each station driven by motors which are normally inert, which includes the steps of starting the motor at each station, qualifying certain of said stations to be non-responsive to lockout signals, transmitting lockout signals to lock out all unqualified stations, communicating among qualified stations, and restoring all station apparatus to initial condition.

5. A method of operating a multi-station telegraph system having stations normally non-responsive to selection code signals, which includes the steps of rendering all stations responsive to selection code signals, transmitting selection code signals to qualify certain of said stations selectively, rendering unqualified stations non-responsive to communication code signals for recording, communicating among qualified stations, and then restoring all stations to original condition.

6. A method of operating a multi-station telegraph system having a communication channel and having selectors at all stations driven by motors which are normally inert, which includes transmitting a signal over the communication channel to start all motors, transmitting from a station a selective signal over the communication channel to modify selectively a remote station, transmitting a signal over the communication channel to stop motors at all other remote stations, communicating with the modified station, and then restoring all apparatus to its original condition.

7. A method of operating a multi-station telegraph system having a communication channel and having selectors at all stations driven by motors which are normally inert, which includes transmitting a signal over the communication channel to qualify all stations to respond to communication code signals, transmitting from a station a selective signal over the communication channel to modify selectively a remote station, transmitting a signal over the communication channel to disqualify all other remote stations from responding to communication code signals for recording, communicating with the modified station, and then restoring all stations to original condition.

8. In a multi-station telegraph system, a line circuit, a plurality of stations connected to said line circuit, normally non-operating motors at said stations, motor starting means responsive to non-permutation signals over said line, motor-driven means responsive to permutation signals over said line to stop motors at some stations, further means to restart said stopped motors, and further means responsive to permutation code signals to stop motors at all stations.

9. In a multi-station telegraph system, a line circuit, a plurality of stations connected to said line circuit, a normally non-operating motor at each station, means responsive to signals in said line to start all motors of the system, relays at each station having contacts to stop a motor, means selectively responsive to signals in said line circuit to prevent said relays from operating at selected stations, and means to operate all non-prevented motor stop relays.

10. In a multi-station telegraph system, a recording receiver, a permutation selector forming a part of said receiver, a normally inert motor to drive said selector, remotely controlled means for starting said motor into operation, means to stop said motor, and selectively responsive means controlled through said selector to further control said motor to maintain said motor in operation independently of said means to stop said motor.

11. In a multi-station telegraph system, a line, a plurality of stations connected to said line, recording receivers at said stations, a permutation selector forming a part of each of said recording receivers, a normally inert motor to drive each of said selectors, means to start all motors, means to operate all selectors in response to station codes, means to set up station selective conditions at selected stations, and means to stop motors only at non-selected stations.

12. In a multi-station telegraph system, motor starting means at all stations responsive to a signal common to all stations to start motors at all stations, motor stopping means at all stations responsive to a signal common to all stations to stop motors, and station selecting means at all stations responsive to selective permutation control signals variant for every station to disable said motor stopping means at each responding station.

13. In a multi-station telegraph system, motor starting means at all stations responsive to a non-permutation signal, motor stop means at all stations, means responsive to variant permutation code signals to disable said motor stop means at a station selectively, and further motor starting means responsive at stations whose motors have been stopped by said second mentioned means and effective to restart said motors.

14. In a multi-station telegraph system, a communication channel, a plurality of stations connected to said communication channel, selectors

at all said stations, motors to drive said selectors and normally non-operating, means to transmit a signal over the communication channel to start all motors into operation, means to transmit from a station a selective signal over the communication channel to modify selectively a remote station, means to transmit a signal over the communication channel to stop motors at all other remote stations, means to communicate with the modified station, and means to restore all apparatus to original condition.

15. In a multi-station telegraph system, selectors at each station, motors to drive said selectors and normally non-operating, means to start all motors into operation, means to modify desired stations to be non-responsive to received lockout signals, means to transmit lockout signals to lock out all unmodified stations, means to communicate among modified stations, and means to restore all station apparatus to initial condition.

16. In a multi-station single-line telegraph system, stations normally non-responsive to communication code signals, means to render said stations responsive to communication code signals, relays at said stations having contacts to render a station non-responsive to communication code signals, signal-responsive means to disable said relays selectively, and means to operate all remaining ones of said relays.

17. In a multi-station single-line telegraph system, a line, stations connected to said line, permutation selectors in said stations, contacts in said selectors responsive to permutation code signals, locking-out relays for disabling a station and responsive to one of said contacts at each station, and other relays for disabling a locking-out relay and responsive to another of said contacts selectively at each station.

18. In a telegraph system, a line circuit, a plurality of stations on said line circuit, a printing telegraph selector at each of the stations, a normally inert motor at each of said stations for driving the selector thereat, means at one of said stations for establishing a condition on said line circuit for starting the motor at each station, and means operative through said selector in response to a signal identified with each station desired for communication for insuring the continued operation of the motor at such station.

19. In a telegraph system, a line circuit, a plurality of stations on said line circuit, a printing telegraph selector at each of the stations, a normally inert motor at each of said stations for driving the selector thereat, means at one of said stations for establishing a condition on said line circuit for starting the motor at each station, means operative through said selector in response to a signal identified with each station desired for communication for insuring the continued operation of the motor at such station, and means responsive through the operation of said selector on a single signal for stopping the motor at each station not desired for communication.

20. In a telegraph system, a line circuit, a plurality of stations on said line circuit, a printing telegraph selector at each of the stations, a normally inert motor at each of said stations for driving the selector thereat, means at one of said stations for establishing a condition on said line circuit for starting the motor at each station, means operative through said selector in response to a signal identified with each station desired for communication for insuring the continued operation of the motor at such station, and means responsive to a different signal and a signal common to all stations for stopping the motor at such station or stations in communication.

21. In a telegraph system, a line circuit, a plurality of stations on said circuit, a plurality of telegraph selectors including selector bars at each of the stations, a normally inert motor at each station for driving the selector thereat, means for establishing a condition on said circuit for starting the motor at each station, means for selecting the selector bars, means individual to a selector bar at each station for insuring the continued operation of the motor at each station when such bar is operated, and means responsive to different selector bars for stopping the motor at all other stations and preventing the operation of said motors until the establishment of a predetermined condition at a station where the motor is operating.

22. A method of operating a single line circuit multi-station telegraph system having recorder selectors at each station driven by recorder selector motors which are normally inert, which includes the steps of starting all recorder selector motors, transmitting over the line circuit signals for modifying certain of said stations, stopping the recorder selector motor at each unmodified station, communicating among modified stations, and restoring from conditions established by a modified station the apparatus at each station to the normal initial condition.

ABRAHAM S. BENJAMIN.

CERTIFICATE OF CORRECTION.

Patent No. 2,148,430. February 28, 1939.

ABRAHAM S. BENJAMIN.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, line 40, after the word "move" insert from; 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 13th day of June, A. D. 1939.

Henry Van Arsdale

Acting Commissioner of Patents.

(Seal)

at all said stations, motors to drive said selectors and normally non-operating, means to transmit a signal over the communication channel to start all motors into operation, means to transmit from a station a selective signal over the communication channel to modify selectively a remote station, means to transmit a signal over the communication channel to stop motors at all other remote stations, means to communicate with the modified station, and means to restore all apparatus to original condition.

15. In a multi-station telegraph system, selectors at each station, motors to drive said selectors and normally non-operating, means to start all motors into operation, means to modify desired stations to be non-responsive to received lockout signals, means to transmit lockout signals to lock out all unmodified stations, means to communicate among modified stations, and means to restore all station apparatus to initial condition.

16. In a multi-station single-line telegraph system, stations normally non-responsive to communication code signals, means to render said stations responsive to communication code signals, relays at said stations having contacts to render a station non-responsive to communication code signals, signal-responsive means to disable said relays selectively, and means to operate all remaining ones of said relays.

17. In a multi-station single-line telegraph system, a line, stations connected to said line, permutation selectors in said stations, contacts in said selectors responsive to permutation code signals, locking-out relays for disabling a station and responsive to one of said contacts at each station, and other relays for disabling a locking-out relay and responsive to another of said contacts selectively at each station.

18. In a telegraph system, a line circuit, a plurality of stations on said line circuit, a printing telegraph selector at each of the stations, a normally inert motor at each of said stations for driving the selector thereat, means at one of said stations for establishing a condition on said line circuit for starting the motor at each station, and means operative through said selector in response to a signal identified with each station desired for communication for insuring the continued operation of the motor at such station.

19. In a telegraph system, a line circuit, a plurality of stations on said line circuit, a printing telegraph selector at each of the stations, a normally inert motor at each of said stations for driving the selector thereat, means at one of said stations for establishing a condition on said line circuit for starting the motor at each station, means operative through said selector in response to a signal identified with each station desired for communication for insuring the continued operation of the motor at such station, and means responsive through the operation of said selector on a single signal for stopping the motor at each station not desired for communication.

20. In a telegraph system, a line circuit, a plurality of stations on said line circuit, a printing telegraph selector at each of the stations, a normally inert motor at each of said stations for driving the selector thereat, means at one of said stations for establishing a condition on said line circuit for starting the motor at each station, means operative through said selector in response to a signal identified with each station desired for communication for insuring the continued operation of the motor at such station, and means responsive to a different signal and a signal common to all stations for stopping the motor at such station or stations in communication.

21. In a telegraph system, a line circuit, a plurality of stations on said circuit, a plurality of telegraph selectors including selector bars at each of the stations, a normally inert motor at each station for driving the selector thereat, means for establishing a condition on said circuit for starting the motor at each station, means for selecting the selector bars, means individual to a selector bar at each station for insuring the continued operation of the motor at each station when such bar is operated, and means responsive to different selector bars for stopping the motor at all other stations and preventing the operation of said motors until the establishment of a predetermined condition at a station where the motor is operating.

22. A method of operating a single line circuit multi-station telegraph system having recorder selectors at each station driven by recorder selector motors which are normally inert, which includes the steps of starting all recorder selector motors, transmitting over the line circuit signals for modifying certain of said stations, stopping the recorder selector motor at each unmodified station, communicating among modified stations, and restoring from conditions established by a modified station the apparatus at each station to the normal initial condition.

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