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SIGNAL CONTROLLED SELECTOR

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FIG. 1

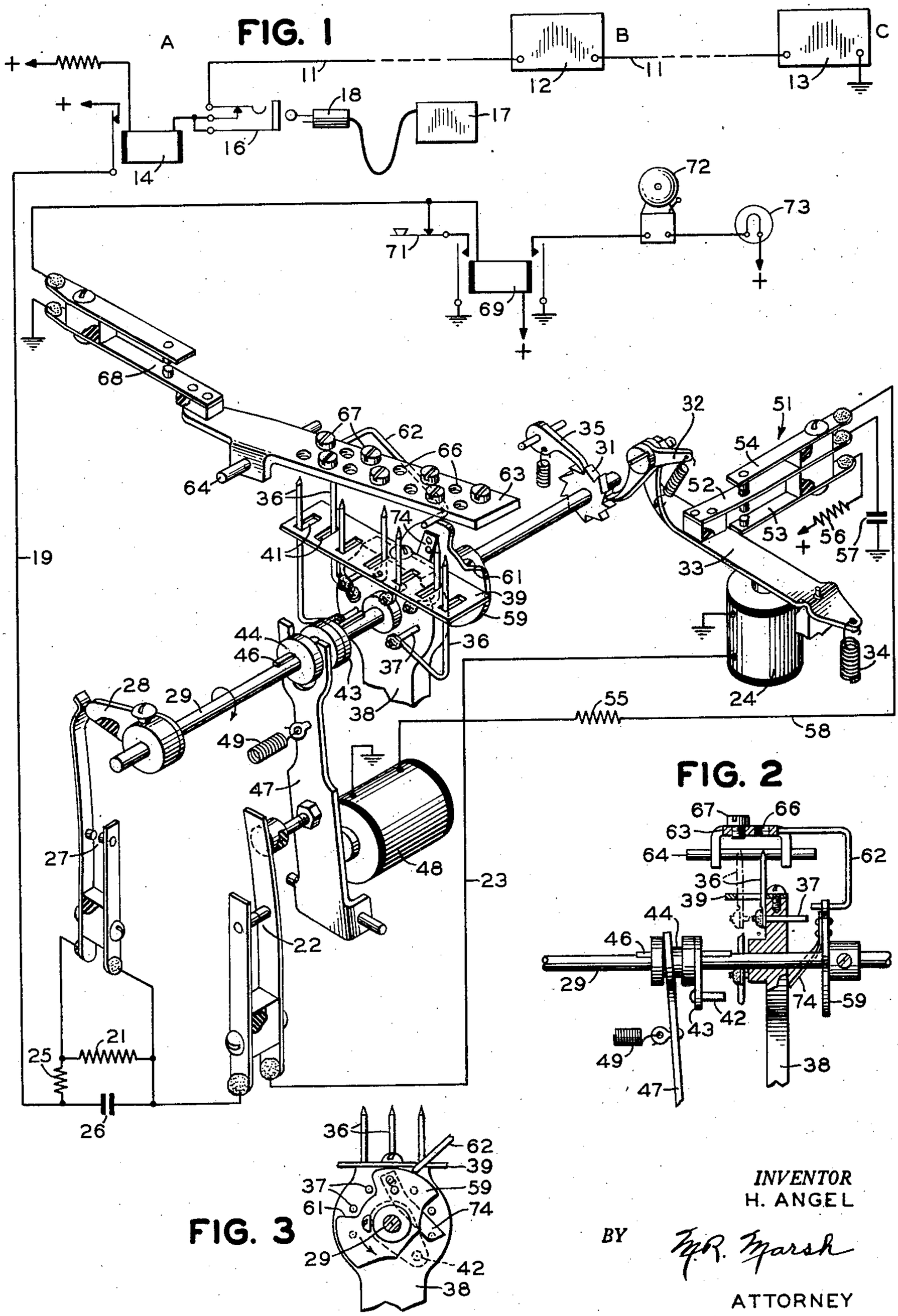

FIG. 2

FIG. 3

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SIGNAL CONTROLLED SELECTOR

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This invention relates to signal controlled selectors, and more particularly to the type of selector that is often used in telegraph systems wherein a plurality of way-stations are serially connected by means of a single way-wire circuit. In such systems the selectors, one of which is located at each station on the circuit, enable any one of the stations on the circuit to be selectively called.

In way-wire circuits wherein a plurality of way-stations are serially connected, the sending and receiving mechanisms at each station are normally disconnected from the circuit, and the selector thereat responding to a particular code or series of signals operates an alarm device to apprise the operator at the desired one of the way-stations that another station desires to communicate therewith. On operation of the alarm device, the operator at the called way-station connects the send-receive mechanism thereat and transmits an acknowledgement signal back to the calling station, whereupon the calling station may then proceed with the transmission of a message with the assurance that the receiving equipment at the desired station or called station is connected to the way-circuit. Since each of the way-stations of the way-circuit has selectors which respond to different calling signals, each may be selectively signaled to the exclusion of the others.

Selectors of the above type have been developed and employed but are extremely intricate in design, expensive to manufacture and maintain, and require for their proper operation signaling codes wherein the individual impulses have a very definite and critical time relationship with each other. Furthermore, selectors of the prior art which are adapted to respond to a particular signal cannot be readily changed to respond to a different code signal.

In accordance with the above, it is one of the primary objects of the present invention to provide a signal controlled selector which is cheap to manufacture, easy to maintain, and has but few moving parts, and which may be easily and readily adapted or changed to respond to any one of a number of different calling code groups of impulses.

Another feature of the invention resides in the provision of a novel and improved arrangement for accurately distinguishing between the various signaling impulses or elements of the calling code.

A still further feature of the invention resides in the provision of a signal controlled selector which does not respond to the normal message

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or traffic impulses pasing over the circuit in which it may be connected, and is only responsive to a calling signal following a predetermined line condition, although the calling signal may include impulses similar to the message impulses.

The above and further objects and features of theinvention will be more apparent in the following detailed description thereof wherein reference is made to the accompanying drawings, in which:

Fig. 1 is a diagrammatic view of a way-wire circuit and the essential elements of a signal controlled selector at one of the way-stations on such a circuit;

Fig. 2 is a fragmentary view partly in section of a part of the mechanical elements of the signal controlled selector; and

Fig. 3 is an end view of some of the elements shown in Fig. 2.

Referring to Fig. 1, a way-circuit 11 is shown serially connecting three way-stations A, B and C. The selector at station A, together with associated circuits and equipment, is shown in considerable detail in Fig. 1, and each of the other stations B and C will have similar equipment, represented by associated rectangles 12 and 13, respectively. The way-circuit 11 is normally in a closed condition with battery being applied at station A and the opposite end being grounded at station C. Serially connected at each station on the way-circuit 11 is a line relay 14 and a jack 15. Only the line relay 14 and jack 15 at station A are shown in Fig. 1, it being understood that each of the other stations has similar equipment. Since the way-circuit is normally in a closed condition, the line relay 14 will be energized during idle periods of the way-circuit. The selector at station A is controlled from the contacts of the line relay 14, and the jack thereat permits a send-receive unit represented by the rectangle 17 to be connected by means of a cord and plug 18 to the way circuit. The send-receive unit 17 may be of any of the well-known types, such as a key and sounder if the way-circuit is operated by Morse equipment, or the unit 17 may be an automatic send-receive mechanism such as that known as a teleprinter.

The send-receive unit 17 may also include calling signal generating means and, if the unit 17 is a key and sounder, the key may be employed to send calling signals to the way circuit, whereas, if the unit 17 is a teleprinter, auxiliary signal generating means may be employed. The calling signal generating means forms no part of the present invention and may be either of the above-

mentioned arrangements, or a fully automatic means may be employed whereby in response to the actuation of a certain control the desired calling signal will be generated.

The usual method of operating a way-circuit of the above type is to have all the send-receive units such as 17 at all the stations dissociated from the way-circuit, and when one station, termed a calling station, desires to communicate with another, termed a called station, the plug 18 at the calling station is inserted in the jack 16 and a calling signal individual to the desired or called station sent over the way-circuit. Since each station has a line relay such as 14 in the way-circuit, they will respond to such a calling signal and control their associated selectors in such a manner that the selector at the desired or called station operates a visual and/or audible signaling means at the called station to apprise the operator thereat that one of the other stations has a message therefor. The operator at the called station will thereupon connect his send-receive unit such as 17 by means of plug 18 and jack 16 to the way-circuit and transmit an acknowledgement signal to the calling station, whereupon the calling station transmits the desired information. After the transmission of the desired information, the plugs at both the calling and called station are moved from their associated jacks and the line is returned to its normal idle condition, whereupon it may be used by the same or other stations on the circuit.

As shown in Fig. 1, the line relay 14 has potential applied to the make contact thereof, and the tongue is connected over a circuit including a conductor 19, a condenser 26 in shunt relation with a shaping resistance 25 and a timing resistance 21, a normally closed pair of contacts 22, a conductor 23, the coil of a stepping magnet 24, to ground. The timing resistance 21 is for preventing the magnet 24 from operating under certain conditions hereinafter described.

In parallel relation with the resistance 21 is a normally open set of contacts 27. The contacts 27 normally tend to assume a closed position, but in the normal position of the selector they are held open by an arm 28 fixed to and rotatable with a shaft 29. The shaft 29 has at its other end a ratchet 31 in operative relation with a stepping pawl 32 carried at the free end of the armature 33 of the stepping magnet 24. On each energization of the stepping magnet 24 the pawl 32 steps the shaft 29 one tooth of the ratchet 31 and on deenergization thereof a spring 34 returns the pawl 32 to its normal position in operative relation with the next tooth of the ratchet wheel. A retaining pawl 35 cooperates with the ratchet 31 to prevent backward rotation thereof.

With the selector shaft 29 in its normal position, holding the contacts 27 open, and with the line relay 14 in its energized position, the condenser 26 will be in a fully charged state. To initiate operation of the selector, the way-circuit 11 is opened for at least a predetermined length of time which, in accordance with the invention, is greater than the length of time the line is normally open during the transmission of normal traffic thereover. This long opening of the way-circuit removes potential at the make contact of the line relay 14 from the circuit to the stepping magnet 24 and permits the charge on the condenser to dissipate through the resistance 21. With the condenser 26 substantially discharged and the line relay 14 deenergized, the next energization of the line relay reapplies potential to the stepping magnet circuit, and the surge of current therein incident to the charging of the condenser 26 is sufficient to energize the stepping magnet 24. When the line relay 14 is opened for short durations in response to the transmission of regular traffic over the way-circuit, the condenser 26 is not discharged sufficiently to require a charging current sufficient to operate the stepping magnet 24, and accordingly the stepping magnet is initially operated only in response to the energization of the line relay 14 following an open line condition of at least a predetermined length.

The initial energization of the stepping magnet 24 effects rotation of the arm 28 fixed to the shaft 29 a sufficient amount to permit the contacts 27 to close. Closing of the contacts 27 short-circuits the timing resistance 21 around the condenser 26 and establishes a circuit from the tongue of the line relay 14 through the resistance 25 and contacts 27 in parallel relation with the condenser 26, the normally closed contacts 22, the coil of the stepping magnet 24, to ground. Thereupon the stepping magnet for a limited number of operations will be energized in accordance with or follow the operation of the line relay 14. Such operation of the stepping magnet 24 effects stepping of the shaft 29, and the manner in which the latter controls the selector will be described in following paragraphs.

The selector of the present invention is adapted to operate in response to a permutation signal code group of dots and dashes, wherein in accordance with the usual arrangement the dots are closed line impulses of short duration and the dashes closed line impulses of longer duration, in the neighborhood of three times the length of a dot. The open line interval between the closed line impulses is substantially the length of a dot in duration. The selector is a device for reading the permutation groups of signals, and when a received group is in accordance with the code assigned to a particular selector and the same responds thereto, that selector is said to be selectively operated.

The selector of the present invention is shown and described herein as being operative in response to a permutation group of signals containing seven impulses. With seven permuted impulses of dots and dashes, 128 different groups of impulses are possible, or, in other words, 128 selectors could be connected in a single circuit and any one of the selectors selectively operated at a time. It will be obvious that a greater or lesser number of permuted impulses could be employed to meet various requirements, the number seven being chosen merely to illustrate the manner of operation of the selector. Furthermore, the selector of the present invention, while being designed to operate in response to seven impulses, may be arranged to operate in response to permuted code groups containing less than seven impulses, as might be the case where only a few selectors were placed on a single way-circuit.

The selector includes a set of so-called code pins 36, one for each impulse of the permuted code group employed to control the same, and in the embodiment of the invention shown there are seven code pins. Each code pin 36 has an unselected and a selected position, and it is the combined selected and unselected positions of the seven code pins that determine the selective operation of the selector. A code pin 36 remains in its normal unselected position in response to

a dot for its respective impulse, whereas in response to a dash a code pin is moved to its selected position.

The upper sections of the code pins **36**, as shown in Fig. 1, are all arranged vertically, and each pin has adjacent the lower end thereof an associated guide pin **37**. The guide pins **37** are disposed substantially parallel to the shaft **29** and are movable axially of the shaft. The guide pins **37** are guided in guide holes in a frame member **38** which also supports the shaft **29** thereat. The code pins **36** are maintained in an upright position and guided by a guide plate **39** secured to the top of the frame member **38**. The guide plate **39** is substantially horizontal and has a series of slots **41** thereon, one for each code pin, to permit limited movement of the code pins **36** and guide pins **37** axially of the shaft **29**.

The code pins **36** in an unselected position are at the left hand ends of their respective slots **41** in the guide plate **39** and in a selected position are at the right hand ends of the slots **41**. A code pin **36** is shown in selected position in Fig. 2 in full outline and in an unselected position in dot-dash outline.

To the left of the guide pins **37**, as shown in Fig. 2, is a pin setting hammer **42**. The hammer **42** is carried in a radially extending arm **43** of a sleeve **44** keyed to the shaft **29** for rotation therewith by means of a key **46** and an appropriate keyway. The sleeve **44** rotates with the shaft **29** but is movable axially thereof, such movement being effected by means of a yoke formed on the end of an armature lever **47**. The armature lever **47** is operated by a selecting magnet **48** and a retractile spring **49**. On energization of the magnet **48**, the sleeve **44** moves to the right and causes the pin setting hammer **42** to engage the left hand end of the guide pin **37** that happens to be aligned therewith and moves it, together with its associated code pin **36**, from an unselected position to a selected position. Thus, the code pins **36** are selectively positioned. The selecting magnet **48** operates, in a manner hereinafter pointed out, in conjunction with the energization of the stepping magnet **24** in responding to the long dash impulses and is unoperated when the stepping magnet operates in response to the short dot impulses. Such operation of the selecting and stepping magnets continues until the shaft **29** has completed a revolution, at which time the contacts **27** open and lift the short circuit around the timing resistance **21**. Thereupon the stepping magnet **24** will operate only in response to the closing of the line circuit following an extended open.

Associated with the armature **33** of the stepping magnet **24** is a set of contacts **51** having a spring biased tongue **52**, a make contact **53** and a break contact **54**. The make contact **53** is connected through a timing resistance **56** to positive potential, the tongue **52** to one side of a condenser **57**, the opposite side of which is grounded, and the make contact **51** is connected over a conductor **58** through a resistance **55** and the coil of the selecting magnet **48** to ground.

As hereinbefore set forth, the stepping magnet **24** is initially operated on the closing of the line circuit following a long open, and the length or duration of the closed line conditions following the long open determines whether or not the selecting magnet **48** is operated. The stepping magnet **24** is normally in an unoperated condition, and when in this condition the tongue **52** of the contact set **51** engaging its break contact **54** connects the winding of the selecting magnet **48** to the grounded condenser **57**, and the said condenser at this time will be in a discharged or discharging condition. When the magnet **24** is operated, the connection to the condenser **57** is transferred to the make contact **53**, whereupon said condenser begins to charge positively through the timing resistance **56**. The value of the timing resistance **56** is such that an appreciable length of time, substantially equal to the length of a dash impulse, is required to fully charge the condenser **57**. Accordingly, the length of the closed line signal impulses following the first long open determines the amount of the positive charge on the condenser **57**, the condenser being substantially fully charged in conjunction with the operation of the magnet **24** in response to a selecting or dash impulse and only partly charged in response to a non-selecting or dot impulse. Each time the magnet **24** is released the condenser **57** is connected through the contacts **51** to the circuit of the selecting magnet **48** to be discharged therethrough. The discharge of the condenser **57** from a fully charged condition through the coil of the selecting magnet **48** is sufficient to operate the same, whereas the discharge thereof from only a partly charged condition is insufficient to operate the selecting magnet. Accordingly, the selecting magnet **48** is operated in conjunction with the receipt of long or dash line impulses and does not operate on the receipt of a short or dot impulse, as controlled by the charges on the condenser **57** which vary in value in accordance with the length of time the stepping magnet **24** is maintained in an operated condition.

Normally the pin setting hammer **42** is out of operative relation or alignment with all of the guide pins **37**, and on the first step of the shaft **29** from its normal position the hammer is stepped or positioned opposite the guide pin of the first code pin **36**. Accordingly, if the stepping magnet **24** is maintained operated sufficiently long to effect operation of the selecting magnet **48**, when the stepping magnet is released in the manner above set forth, the hammer **42** will move the first code pin **36** from its normal unselected position to a selected position. If the magnet **24** is maintained operated for a short period, as in response to a dot, the selecting magnet **48** will not be operated, and on the next operation of the stepping magnet **24** the hammer **42** will be stepped around one step to a position opposite the guide pin of the second code pin **36**. Whether or not this second code pin remains in its unselected position or is moved to its selected position is determined by the length of time the stepping magnet **24** is held operated in response to the second impulse of the permutation group or calling code. In a similar manner the hammer **42** is successively stepped opposite the guide pins of the other five code pins and the selecting magnet **48** operated or allowed to remain in its unoperated position in accordance with the length of respective signaling impulses. Thus, the seven code pins **36** are set in a permuted setting corresponding to the received impulses.

It requires seven impulses to selectively position the seven code pins, and following the transmission thereof the calling station transmits a number of additional impulses which may be either dots or dashes or combinations thereof to cause the selector shaft **29** to complete its revolution. In the illustrated embodiment of the invention it requires a total of ten impulses to effect a complete revolution of the selector shaft

29, and therefore three additional impulses are necessary. The tenth step of the shaft effects opening of the contacts 27 which, as described, prevents further operation of the stepping magnet 24 in response to impulses corresponding in length to either dots or dashes.

Also fixed to the selector shaft 29 is a disc cam 59 which has a notch 61 therein in operative relation with an arm 62 extending from a pivoted latch 63. The latch 63 is pivoted on a pivot rod 64 and extends over the code pins 36. On the eighth step of the shaft 29 the notch 61 in the disc 59 rotates into operative relation with the end of the arm 62 whereby the latch 63 is permitted to drop. The section of the latch 63 extending over the code pins 36 has a pair of holes such as 66 for each one of the code pins. One of the holes of the pair will be in alignment with its associated code pin with the code pin in its unselected position, and the other hole of the same pair will be in alignment with the code pin when the code pin is in its selected position. Normally one hole 66 of each pair will be plugged by some means such as screws 67 threaded therein, and if the position of the code pin is such as to engage one of the plugs when the latch 63 is permitted to drop, further downward movement thereof is prevented. If the code pins are positioned in accordance with the unblocked holes 66, the upper ends of the code pins are permitted to enter the same and the latch is permitted to pivot or drop a greater distance. In operative relation with the opposite end of the latch 63 is a pair of contacts 68. The contacts 68 are normally open and are closed only when the latch 63 pivots the greater amount, or when the latch pivots to the extent permitted by the upper ends of the code pins 36 entering the unblocked holes 66. Thus, when the code pins 36 are positioned in accordance with the unblocked holes in the latch 63, the contacts 68 are permitted to close.

The closing of contacts 68 completes an obvious circuit for causing operation of a relay 69 which is locked up through a circuit including its left hand tongue and make stop and a key 71. On operation of the relay 69, the right hand tongue thereof completes a circuit to an alarm device such as an audible bell 72 and/or a visual signal lamp 73. The alarm devices 72 and 73 remain operated for the time being, even though the contacts 68 open on the next or ninth step of the shaft 29 as the end of the arm 62 passes out of operative relation with the notch in the cam 61 to raise the latch 63 back to its normal unoperated position. On the tenth step of the shaft 29 the contacts 27 open and prevent further rotation of the shaft in response to short impulses in the manner set forth.

The operation of the alarm devices 72 and 73 at the called station apprises or notifies the operator thereat that some other station on the circuit has a message for the called station. The called operator then connects his send-receive unit such as 17 to the circuit by means of connecting facilities, such as a plug and jack 18 and 16, and transmits the proper acknowledgement signal. Concomitantly therewith the called operator opens the key 71 to interrupt the locking circuit to his relay 69, whereupon the said relay releases and opens the circuit to the alarm devices such as 72 and/or 73.

It will be obvious from the above that on the transmission of the long open all the selectors in the circuit are initiated into operation, and during the operation thereof all the latches such as 63 are permitted to drop following the setting of their associated code pins 36. However, it is only the latch 63 of the selector whose code pins 36 are set in accordance with the unblocked holes 66 that is allowed to operate its contact 68, and through a relay 69 initiate operation of an alarm device such as 72 and/or 73. By changing the positions of the screws 67 from one of a pair of holes 66 to the other, a selector may be adapted to close the contact 68 in response to a different permutation of dots and dashes. This change is very readily made, and the holes 66 are threaded to receive the screws 67. By leaving both holes 66 of one or more pairs open the selector can be adapted to operate in response to a permutation of a lesser number of impulses, as might be desirable if only a few selectors were installed in a way-circuit. For example, if screws 67 were placed in only one or the other of the first four pairs of holes, the selector would selectively operate in response to signals corresponding to the positions of these screws, and the remaining impulses could be either dots or dashes. Thus, in accordance with the above, a selector is provided which may be adjusted to respond to a different code without requiring dismantling or extensive changes thereof.

The code pins 36 are reset into their normal unselected positions by means of a reset cam 74 fixed to the left hand side of the disc cam 59. The reset cam 74 successively engages the right hand ends of the selected code pins 37, and as the shaft 29 rotates the reset cam causes the pins to slide to the left to their unselected positions. The reset cam 74 is so positioned that it engages a guide pin 37 one or two steps ahead of the setting hammer 42.

The contacts 22 in the stepping magnet circuit are provided to insure full operation of the selecting magnet 48. Without the contacts 22, the stepping magnet 24 might be in a deenergized condition for a period insufficient to permit full operation of the selecting magnet 48. By means of the contacts 22 the stepping magnet circuit is opened, and the stepping magnet 24 can, therefore, not be reoperated to open the circuit to the selecting magnet 48 until the selecting magnet has had time to be fully operated and selectively positions one of the code pins 36.

It will be obvious that various modifications of the invention may be made without departing from the spirit or essential attributes thereof, and it is desired, therefore, that only such limitations be placed thereon as are imposed by the prior art or are specifically set forth in the appended claims.

What is claimed is:

1. In a device of the type described, a first magnet a circuit for operating said magnet, a condenser associated with said circuit, said condenser normally preventing operation of said magnet in response to changes in said circuit of less than a predetermined duration, means operated by said magnet in response to a change in said circuit of greater length than said predetermined duration to render said condenser ineffective to further control operation of said magnet whereupon said magnet becomes responsive to impulses of less than said predetermined duration, a second magnet and a second circuit therefor, a second condenser associatable with said second circuit, means for varying the charge of said second condenser during all and in accordance with the length of the periods of operation of said first magnet, and means including

said second condenser for controlling the operation of said second magnet.

2. In an impulse receiver for a remote controlled device, the combination of a first and a second magnet and electrical circuits therefor, said circuits including condensers, means including one of said condensers for effecting a first operation of said first magnet in response to a second condition of said circuits only after the establishment of a first condition of said circuits for at least a predetermined length of time, means controlled by the first operation of said magnet to alter the effect of said condenser on said circuits whereby said magnet responds to the establishment of said second circuit condition for periods of shorter duration than said predetermined length, and means including another of said condensers and dependent upon the durations of operation of said first magnet in response to any one of said second circuit conditions for selectively effecting operation of said second magnet.

3. In a selector for a remote control system, a line circuit adapted to have two different line conditions established thereover, a first relay and a second relay, said first relay controlling said second relay and normally being unresponsive to changes in the condition of said line circuit of less than a predetermined duration, means for initially operating said first relay in response to the establishment of a predetermined one of said line conditions following the establishment of the other line condition thereover for at least said predetermined duration, means controlled by the initial operation of said relay to render the same operative in response to line conditions of less than said predetermined duration, a second means controlled by said first relay for selectively operating said second relay, and means dependent upon the duration of said first relay operating line conditions for controlling the operation of said second means whereby said second relay is operated in conjunction with all operating line conditions for said first relay of greater than a second predetermined duration and is not operated in conjunction with said line conditions of less than said second predetermined duration.

4. In combination, a first relay and a second relay, circuits associated with said relays, means for rendering said first relay initially responsive to a condition of said circuits only when following another condition of at least a predetermined duration and after said first response to be responsive to said second mentioned conditions following said first mentioned conditions of less than said predetermined duration, and means dependent upon the length of said second mentioned line conditions and including said first relay for effecting repeated operation of said second relay following the first response of said first relay.

5. In an impulse receiver for a remote controlled device, a plurality of selectors each having a normal unselected and a selected position, a magnet controlled selector actuating member, means for positioning said selector actuating member successively into operative relation with said selectors, a source of control signal impulses of two different lengths, means for maintaining said selector actuating member unactuated in response to impulses of one length and to operate the same in response to impulses of the other length whereby said selectors are selectively positioned in accordance with the received impulses.

6. In a remote controlled device, a source of signals consisting of permuted groups of impulses of two different lengths, a set of selectors one for each impulse of the permuted groups, each selector having a normal unselected position and a selected position, a selector actuator, means for successively advancing said selector actuator into operative association with said selectors in conjunction with successive impulses, and means controlled by the length of said impulses for operating said actuator in response to the longer of said impulses and to retain the same unoperated in response to the shorter of said impulses whereby said selectors are set in permuted settings representing said received impulses.

7. In an impulse receiver for a remote control system, a source of signals, a first and a second electro-responsive means, electrical circuits therefor, condensers associated with said circuits, means including one of said condensers to render said first electro-responsive means initially responsive to one type of signal following the receipt of a second type for at least a predetermined length of time, means operated by the initial response of said electro-responsive means to render said condenser ineffective in said circuits to further delay operation of said electro-responsive means and whereby the same is operative in response to said one type of signals following the receipt of said second type for less than said predetermined length of time, and means including a second one of said condensers for operating said second electro-responsive means whenever said first electro-responsive means is operated for at least a predetermined length of time in response to said first type of signals.

8. In an impulse receiver for a remote control system, a source of signals, a first and a second electro-responsive means, electrical circuits therefor, condensers associated with said circuits, means including one of said condensers to render said first electro-responsive means initially responsive to one type of signal following the receipt of a second type for at least a predetermined length of time, means operated by the initial response of said electro-responsive means to render said condenser ineffective in said circuits to further delay operation of said electro-responsive means and whereby the same is operative in response to said one type of signals following the receipt of said second type for less than said predetermined length of time, and means including said first electro-responsive means and a second one of said condensers for selectively controlling repeated operations of the second one of said electro-responsive means, said condenser controlling the operation of said second electro-responsive means in such a manner that the same is operated in conjunction with operations of said first electro-responsive means exceeding a predetermined length and not operated in conjunction with operations of said first electro-responsive means of less than said last predetermined length.

9. In an impulse receiver for a remote control system, a source of signals, a first and a second electro-responsive means, electrical circuits therefor, condensers associated with said circuits, means including one of said condensers to render said first electro-responsive means initially responsive to one type of signal following the receipt of a second type for at least a predetermined length of time, means operated by the initial response of said electro-responsive means to render said condenser ineffective in said circuits to further delay operation of said electro-responsive means and whereby the same is operative in response to said one type of signals

following the receipt of said second type for less than said predetermined length of time, means effective during the operated state of said first electro-responsive means to vary the state of charge of a second one of said condensers whereby the state of charge thereof is dependent upon the length of each of the operated periods of said first electro-responsive means, and means dependent upon the said state of charge of said second condenser for controlling operations of said second electro-responsive means.

10. In an impulse receiver for a remote control system, a source of signals, a first and a second electro-responsive means, electrical circuits therefor, condensers associated with said circuits, means including one of said condensers to render said first electro-responsive means initially responsive to one type of signal following the receipt of a second type for at least a predetermined length of time, means operated by the initial response of said electro-responsive means to render said condenser ineffective in said circuits to further delay operation of said electro-responsive means and whereby the same is operative in response to said one type of signals following the receipt of said second type for less than said predetermined length of time, means effective during the operated state of said first electro-responsive means to vary the state of charge of a second one of said condensers whereby the state of charge thereof is dependent upon the length of each of the operated periods of said electro-responsive means, means dependent upon the said state of charge of said second condenser for controlling operations of said second electro-responsive means, and means for preventing a second operation of said first electro-responsive means when said second electro-responsive means is conditioned for operation until after full operation of said second electro-responsive means.

11. In an impulse receiver for a remote control system, a source of signals, a first and a second electro-responsive means, electrical circuits therefor, condensers associated with said circuits, means including one of said condensers to render said first electro-responsive means initially responsive to one type of signal following the receipt of a second type for at least a predetermined length of time, means operated by the initial response of said electro-responsive means to render said condenser ineffective in said circuits to further delay operation of said electro-responsive means and whereby the same is operative in response to said one type of signals following the receipt of said second type for less than said predetermined length of time, a set of selectors, a selector actuating member operated by said second electro-responsive means, a first means operated by said first electro-responsive means to successively position said actuating member in operative relation with said selectors individually, a second means operated by said first electro-responsive means to variably control the condition of charge on a second one of said condensers in accordance with the length of the periods of operation thereof, and means including the condition of charge of said second condenser to control the operation of said second electro-responsive means whereby individual ones of said selectors are selectively actuated in response to said first type of signals exceeding a predetermined length.

12. In a telegraph selector, a source of signal impulses of two different line conditions, a first and a second magnet, electrical circuits for said

magnets, condensers associated with said circuits, the state of charge of one of said condensers being initially controlled by said signals in a manner to be charged during one signal condition at a predetermined rate and to discharge during the other condition at a different rate, means controlled by the state of charge of said condenser on the receipt of one line condition to operate said first magnet, means controlled by the initial operation of said first magnet to thereafter render said first magnet operative in response to impulses of said one line condition independent of the charge of said condenser, means controlled by each of the energized and unenergized conditions of said first magnet to vary the state of charge of a second one of said condensers, and means including the state of charge of said second condenser to control the operation of said second magnet.

13. In a telegraph selector, a source of signal impulses of two different line conditions, a first and a second magnet, electrical circuits for said magnets, condensers associated with said circuits, the state of charge of one of said condensers being initially controlled by said signals in a manner to be charged during one signal condition at a predetermined rate and to discharge during the other condition at a different rate, means controlled by the state of charge of said condenser on the receipt of one line condition to operate said first magnet, means controlled by the initial operation of said first magnet to thereafter render said first magnet operative in response to impulses of said one line condition independent of the charge of said condenser, means controlled by the energized and unenergized conditions of said first magnet to vary the state of charge of a second one of said condensers, means including the state of charge of said second condenser to control the operation of said second magnet, a set of selectors selectively positioned by said second magnet whereby the same are permutably set in accordance with a received series of signals, a function controlling member associatable with said selectors, said member having means for sensing the positions of said selectors and means controlled by said member when sensing a predetermined setting of said selectors for effecting a function.

14. In an impulse receiver for a remote control system, a source of signals of two different line conditions, first and second relays, circuits for said relays, condensers associated with said circuits, one of said condensers being arranged to assume one state in response to one line condition and to assume another state in response to the other line condition, means controlled by said condenser in one of said states to prevent initial operation of said first relay in response to one line condition unless said line condition is preceded by the other line condition for at least a predetermined period, switching means controlled by the initial operation of said relay to render said condenser ineffective to further affect operation of said relay whereby the same responds to all further operating line conditions regardless of the length of the non-operating line conditions, a set of selectors, a selector actuator, means controlled by the initial and subsequent operations of said first relay to successively associate said actuator with said selectors, means including a second one of said condensers and dependent upon the length of the operating line conditions of said first relay to selectively operate said second relay where-

by said second relay is operated in conjunction with said first relay in response to operating line conditions of one length and is not operated on the receipt of impulses of the same line condition of another length, and means controlled by said second relay to operate said selector actuator whereby said selectors are selectively positioned in accordance with the length of successive operations of said first relay.

15. In an impulse receiver for a remote control system, a source of signals of two different line conditions, first and second relays, circuits for said relays, condensers associated with said circuits, one of said condensers being arranged to assume one state in response to one line condition and to assume another state in response to the other line condition, means controlled by said condenser in one of said states to prevent initial operation of said first relay in response to one line condition unless said line condition is preceded by the other line condition for at least a predetermined period, switching means controlled by the initial operation of said relay to render said condenser ineffective to further affect operation of said relay whereby the same responds to all further operating line conditions regardless of the length of the non-operating line conditions, a set of selectors, a selector actuator, means controlled by the initial and subsequent operations of said first relay to successively associate said actuator with said selectors, means including a second one of said condensers and dependent upon the length of the operating line conditions of said first relay to selectively operate said second relay whereby said second relay is operated in conjunction with said first relay in response to operating line conditions of one length and is not operated on the receipt of impulses of the same line condition of another length, means controlled by said second relay to operate said selector actuator whereby said selectors are selectively positioned in accordance with the length of successive operations of said first relay, a latch member movable toward said selectors and having a pair of recesses for each selector with one of said recesses of each pair normally being blocked, and means determined by the positions of said selectors and the unblocked recess of each pair to determine the extent of movement of said latch member.

16. In an impulse receiver for a remote control system, a source of signals of two different line conditions, first and second relays, circuits for said relays, condensers associated with said circuits, one of said condensers being arranged to assume one state in response to one line condition and to assume another state in response to the other line condition, means controlled by said

condenser in one of said states to prevent initial operation of said first relay in response to one line condition unless said line condition is preceded by the other line condition for at least a predetermined period, switching means controlled by the initial operation of said relay to render said condenser ineffective to further affect operation of said relay whereby the same responds to all further operating line conditions regardless of the length of the non-operating line conditions, a set of selectors, a selector actuator, means controlled by the initial and subsequent operations of said first relay to successively associate said actuator with said selectors, means including a second one of said condensers and dependent upon the length of the operating line conditions of said first relay to selectively operate said second relay whereby said second relay is operated in conjunction with said first relay in response to operating line conditions of one length and is not operated on the receipt of impulses of the same line condition of another length, means controlled by said second relay to operate said selector actuator whereby said selectors are selectively positioned in accordance with the length of successive operations of said first relay, a selector position sensing member movable toward said selectors after the selective positioning thereof, each of said selectors in one position blocking movement of said member and in the other position permitting movement thereof, an alarm device, and means operated by said member when movement thereof is unblocked by all of said selectors to render said alarm device operative.

17. The combination as set forth in claim 16 and including a pair of holes in said sensing member for each of said selectors and removable plugs for one of each pair of holes whereby one of each pair may be selectively plugged to block movement of said member and thereby render said alarm device responsive to corresponding series of line conditions.

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