

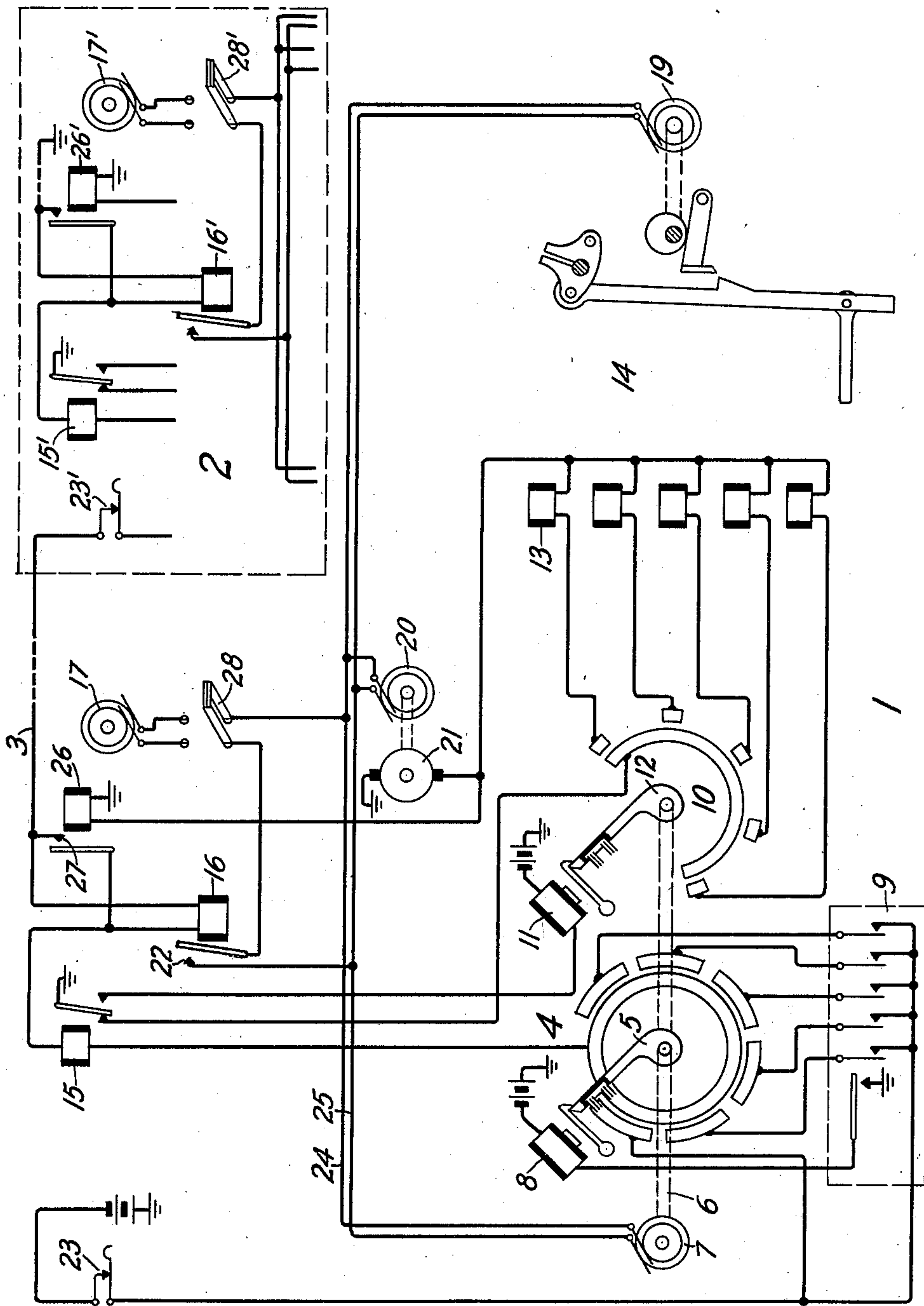
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SIGNALING SYSTEM

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SIGNALING SYSTEM

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This invention relates to control systems for signaling circuits, such as printing telegraph systems.

The object of the invention is to reduce the operating expense of signaling systems and particularly of those which are used only intermittently.

The feature which particularly distinguishes the present invention from systems previously proposed is means for operating such systems by alternating current without the use of constantly operating motors, batteries or other equipment which requires attention or consumes power while not actually in use.

In such systems it is customary to provide means so that the calling station may start the printer mechanisms when a message is to be sent and stop them when the message is completed. One such system is disclosed in Patent 1,648,974 granted to Vernam November 15, 1927. It should be noted, however, that systems of this kind require a source of energy such as a generator which must be running continuously so as to be available at all times to supply power to the printer motors. If the power required is obtained from alternating current mains, such a source is of course unsuitable for operating the printer selecting magnets so that a battery or its equivalent must be provided at each local station. In either case operating or maintenance expense in addition to that occasioned by the actual transmission of messages is involved.

In accordance, therefore, with the present invention, these telegraph sets may be energized entirely from local alternating current sources by providing alternating current motors for driving the distributors, the printer mechanism and also a local, normally idle, direct current generator. A relay at each station is arranged to release upon an open impulse from the calling station to start all three motors. Direct current from the local generator is then available to operate the selecting magnets and also a second relay which shunts the motor control relay out of the line. When the message is completed, the circuit of the second relay is opened lo-

cally at each station, thereby reenergizing the motor control relay, stopping the motors and leaving the system in the proper condition to respond to the next starting impulse.

The drawing illustrates one embodiment of the invention. Each of the stations 1 and 2 connected by a line conductor 3 is equipped with complete transmitting and receiving mechanisms of the start-stop type. For the sake of simplifying the drawing, transmitting and receiving equipment is indicated only at station 1.

The transmitting equipment comprises the transmitting distributor 4 which has a brush arm 5 frictionally mounted on a shaft 6, driven by a motor 7 and which is arranged to be stopped periodically by a release magnet 8. The brush arm 5 is provided with a brush for consecutively bridging a plurality of segments with a continuous ring, the segments being connected with the contacts of the transmitter 9 which may be either of the automatic or manual type. The receiving mechanism comprises a receiving distributor 10 which like the transmitting distributor 4 is provided with a release magnet 11 for periodically arresting the rotation of brush arm 12 also frictionally mounted on the shaft 6. The segments of the distributor 10 are connected with the selecting magnets 13 of a receiving printer 14. Only so much of the printer is shown as is necessary for a clear understanding of the invention. The printer may, of course, be of any well known type, such as that disclosed in Patent 1,623,809, granted to Pfannenstiehl April 5, 1927.

Each of the stations is provided with a line relay 15 which controls through its front contact the energization of the selecting magnets 13 upon the passage of the brush carried by the brush arm 12 over the segments to which the selecting magnets are connected. Relay 15 through its back contact controls the release magnet 11 of the receiving distributor 10. In series with the line at each station is a relay 16 which is arranged to control a power supply 17 in response to variations of line current as already described.

The operation of the system with particular reference to the present invention will

now be described. Assuming that the operator of station 2 desires to transmit a message to station 1, he depresses key 23', thereby opening the line circuit and causing relays 15 and 16 to release. Relay 16 in releasing connects the power source 17 to motor leads 24 and 25 thereby starting motors 7, 19 and 20. The power source is indicated in the drawing as an A. C. generator 17, but will, of course, in most cases be a connection to local power mains so that no power is consumed until relay 16 releases. Distributor 4 and the main shaft of the printer indicated at 14 come up to speed quickly and the generator 21 builds up voltage so that the station apparatus is in readiness for the transmission of signals from station 2. As the generator comes up to speed current flows through the winding of relay 26, closing contact 27 and thereby preventing the line current from reenergizing relay 16 and stopping the motors when key 23' is released.

Since the apparatus at station 2 is a duplicate of that at station 1, it is obvious that the motors at station 2 also will be started in response to the operation of key 23' and maintained in operation by the relays at that station as already described for station 1. When the message is completed the calling station will indicate this fact by transmitting a predetermined signal. Each station operator will then open the local switch 28 thereby disconnecting the power source from the motors and bringing them to rest. As the generator decelerates relay 26 is released thereby removing the shunt from relay 16 and permitting the line current to open contact 22. As soon as the motors have stopped, switch 28 is reclosed so that relay 16 may again put the station apparatus in service in response to an open impulse.

For convenience in illustrating the invention it has been described with reference to a particular system, but it will be evident that the invention is applicable to many modifications of the specific disclosure. For example, the drawing shows schematically a simple start-stop system comprising a line connecting two stations; the system, however, may be of any other well known type and may consist of a number of stations in a series or operating through a common exchange as in a telephone system. In some cases, where operating conditions permit, it might be preferable to energize relay 26 by means of line current or even to omit relay 26 altogether and add additional contacts to relay 16. If either of these expedients were employed, it would, of course, be necessary to add a stop key in series with the contacts shunting relay 16.

What is claimed is:

1. A control system comprising a line connecting a plurality of stations, recording apparatus located at each of the stations and

operative over the line, an electric motor for supplying motive power to the recording apparatus, an operating circuit for the motor, means responsive to a predetermined alteration of the normal condition of the line for closing the operating circuit, and locally energized relay means for maintaining the circuit independently of subsequent changes in the condition of the line.

2. A control system comprising a line connecting a plurality of stations, recording apparatus having a plurality of selecting magnets at each of the stations and operative over the line, a source of power, a generator for supplying current to the magnets, a plurality of motors driving the apparatus and the generator, a circuit between the power source and the motors including relay means responsive to a predetermined alteration of the normal condition of the line for energizing the motors, means responsive to current from the generator for maintaining the circuit independently of subsequent changes in the condition of the line, and means at each of the stations for stopping the motors at that station and reconditioning the relay means.

3. A power supply system for printing telegraph apparatus comprising a source of power, a generator, motors driven by the source and supplying motive power to the apparatus and to the generator, relay means remotely controlled for energizing the motors, means responsive to current from the generator for preventing reoperation of the relay means, and means adjacent to the apparatus for stopping the motors.

4. A power supply system for printing telegraph apparatus comprising a source of alternating current, a normally deenergized source of signaling current, at least one motor driven from the alternating current source for actuating the apparatus and energizing the source of signaling current, and relay means remotely controlled for energizing the motors.

5. A power supply system for printing telegraph apparatus comprising a source of alternating current, a normally deenergized source of signaling current, a plurality of motors driven from the alternating current source for actuating the apparatus and energizing the source of signaling current, relay means remotely controlled for energizing the motors, means responsive to current from the source of signaling current for preventing the reoperation of the relay means and means adjacent to the apparatus for stopping the motors.

In testimony whereof, I have signed my name to this specification this 17 day of October, 1928.

HAROLD D. BULLOCH.